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ISSUE 153 SEPTEMBER 2014

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EDITORIAL

ATTACK OF THE CLONES

FORGIVE THE COMPLETELY predictable headline, but it's hard not to see the flood of blatant *Swing Copters* clones as nothing short of an invasion into the realm of hard-working developers.

No other industry seems to suffer from this. When J.K. Rowling released each *Harry Potter* novel, there weren't shelves packed with almost identical tomes hoping to be mistaken for the real deal. Granted, there are those straight-to-DVD films that ape the latest cinematic blockbusters, but it's fairly obvious to all but the most oblivious consumer that these are feeble copies of the Hollywood greats.

In such cases, copycats are nothing more than a pest, a source of amusement and – for some consumers – a curiosity purchase. But with more than 30 *Swing Copters* rip-offs on Google Play a whole day before Dong Nguyen released his official *Flappy Bird* follow-up, not to mention more on iOS and Windows Phone, that pest becomes an infestation. And it's one developers shouldn't stand for.

As our legal experts tell us on the next page, fighting these copycats on multiple mobile marketplaces in various different territories is beyond a nightmare. But it's a necessary headache if action against these clones results in fewer of them.

The best defence is awareness. Devs must clue themselves up on how to protect their IP, their artwork, their game names – anything that can be legally registered to you and your studio.

Thanks to the open app stores and wealth of accessible toolsets, it's become easier to release a game than ever before. Sadly, the cloners have worked this out too.

James Batchelor
james.batchelor@intentmedia.co.uk

The fight against app clones

Experts explain legal difficulties in policing mobile marketplaces as new game from Flappy Bird creator entices hordes of copycats ● Developer awareness and vigilance deemed best defence against inevitable replicas

by James Batchelor

SWING COPTERS. SWINGING *Copters. Swing Bird. Swingy Copter Pro. Swing Chopper. Copter Bird Swinging*.

The threat of copycats was best demonstrated in recent weeks by the wave of titles mimicking *Flappy Bird* creator Dong Nguyen's new game.

His indie hit *Flappy Bird* was pulled from mobile marketplaces earlier this year – and an army of replicas and clones were released in the days that followed.

And just a few weeks ago, the same thing occurred to Nguyen's new game *Swing Copters*. On the eve of its official release, more than 30 clones were made available on Google Play, with others appearing on the Apple App Store and Windows Phone Store.

Nguyen isn't the first developer to suffer from other studios copying their work, and few believe he will be the last. So what can devs do to protect their creations?

COPYRIGHT PROBLEMS

Nicolas Murfett, associate for interactive entertainment and sport at legal firm Harbottle & Lewis, says that copyright may not protect developers in the way they think it does.

"Copyright does not protect ideas – it only protects the expression of those ideas," he told *Develop*.

"This may seem to offer studios a useful sword with which to attack clone games. However, there is a significant body of case law that suggests this sword is more of an inflatable kid's toy.

"Absent of any direct copying of an existing game's source code or of any of the other copyrightable works in that game – such as the artistic or musical works – it is unlikely that a title looking or feeling very similar will infringe the copyright in that existing game.

"Neither a game's 'look and feel' nor its mechanics are protectable in the UK."

Daithi Mac Sithigh, reader in law at Newcastle University, added: "The English courts turned away a case of copyright infringement in arcade games because there wasn't any copying of code and the similarity was in gameplay and mechanics, which are harder to define as protected by copyright. European courts are still grappling with this – particularly on whether an interface is an original work."

Murfett instead suggests that developers look to other forms of intellectual property for protection. Some studios, for example, register trademarks for words in the titles of their games or company name.

"What's happening at the moment in games is classic gold rush behaviour."

Daithi Mac Sithigh

"This can be easier as you don't need to show that anything has been copied," he said. "A registered trademark grants the owner the right to prevent third parties from using that trademark in relation to the goods and services for which it is registered, and can be used to remove clone games with similar titles from the marketplace.

"However, studios pursuing such a course of action may need to bear in mind the certain parts of the gaming community's strong views on such strategies and get the balance right between good law and good business."

PLATFORM DUTIES

As the *Swing Copters* clones emerged, attention inevitably turned to the platform holders. Google was quick to clear dozens of blatant copies from its marketplace, although at the time of writing several are still available. The same is true for the Windows Phone Store, although the Apple App Store appears to be clone-free.

Both Apple and Google declined to comment, but a Microsoft spokesperson offered the following assurance to *Develop* readers: "Microsoft takes the intellectual property of our app partners seriously and we use several layers of deterrence and response to help protect them.

"First, all apps are encrypted to help prevent piracy and we encourage developers to take advantage of obfuscation tools for an added layer of protection. Because the Windows Phone Store is the

// MEANWHILE ON DEVELOP.NET

Chris Kempt reflects on his experience with BBC's Dragons' Den
http://deve1op.net/1oU4ruO

VIDEO: An Audience With... Tearaway's audio whizz Ed Hargrave
http://deve1op.net/1odKkBy

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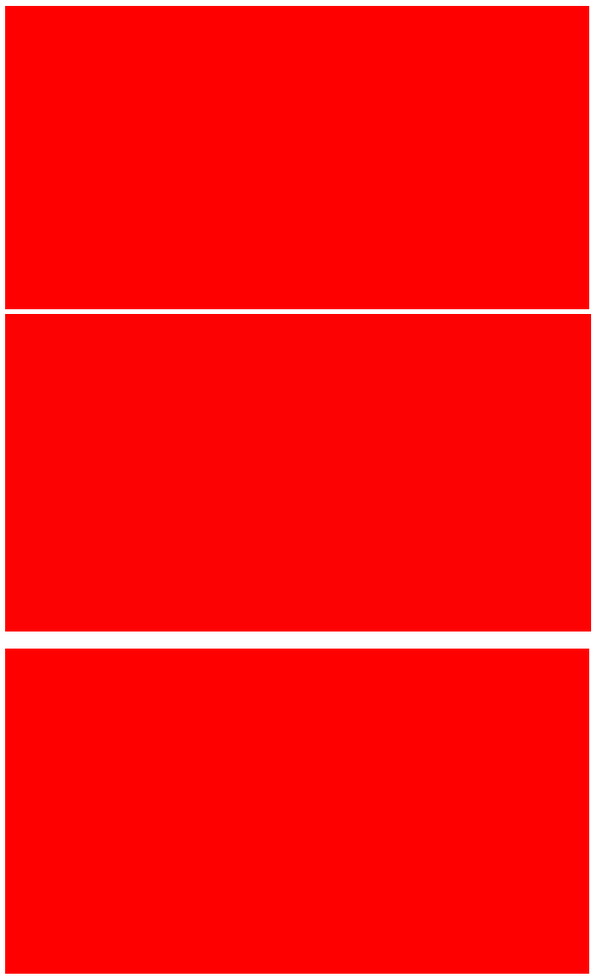


Legal expert Nicolas Murfett (above) says it is nigh on impossible to copyright mechanics and game ideas, but there are other ways to dissuade copycats

only authorised source of apps and games, developers can more easily police infringement of their apps by monitoring the store and notifying Microsoft if infringement occurs.

"Finally, we educate every developer from the very start – before apps are even submitted – reminding them in our developer agreements and policies that Microsoft does not permit infringement of intellectual property of others."

Murfett stresses that there are limitations to what platform holders can do against such a force of cloned titles.

"While Apple and Google have no legal obligation to actively police cloning on their platforms, they may have an interest in helping studios to combat it as a plethora of cloned games only serves to make it harder for users to find the games they actually want to play and spend money on," he said.

"However, it is unlikely that platform owners will agree to include clone detection as part of their certification processes, as to do so would extend certification times significantly and result in an additional administrative burden.

"That's not to say platform owners are unwilling to do anything. All of the big three are willing to investigate complaints and some have even recently taken steps to streamline this process."

> ***"If a clone of your game appears, the most effective action is reactive not proactive."***
> Tom Phillips

PREVENTATIVE MEASURES

The consensus is that cloning – as distressing as it may be for developers – is highly difficult to curtail. Sithigh and his colleague Tom Phillips, senior research associate at the University of East Anglia, suggest that the best defence against copycats is more vigilant reactions from infringed developers.

"It's difficult to say what preventative measures can be taken by developers themselves – if a clone of your game appears the most effective action is more likely to be reactive than proactive," said Phillips.

"The best action a developer can take is to make sure the value of their own game property is maximised."

Sithigh added: "There's a legal argument that overprotection ends up hurting the community in the long run because it fosters a risk-averse development culture. Markets tend to stabilise as time goes on – what's happening at the moment is classic gold-rush behaviour and we already see talk of cleaning up the space."

Harbottle & Lewis' Murfett adds that cloning is unlikely to diminish over the next few years. In fact, as it becomes harder for new games to be discovered on app stores, developers "looking for a quick buck" will see cloning as the more attractive option.

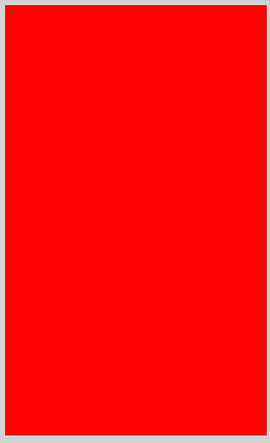
However, if platforms, studios and users pro-actively take action against copycats, the industry has a better chance of stopping them.

"Until the issue of game cloning is properly addressed by the industry, the courts or new legislation, it will continue to be very difficult, for the reasons set out above, to prevent cloning," he said.

"The best way to combat cloning may be for studios to look to more practical solutions such as publicising their games so that they get the credit they deserve and that users know which studios are responsible for the games they love. Similarly, users should be educated to remember to rate and review the games they love – to help with the search result prominence of those games – and to report any games they suspect of being clones to the relevant platform owners." ■

Sithigh and Phillips will discuss this issue at next month's Develop Live, in a session entitled 'From pocket money to Flappy Bird and beyond: Things to know about copyright and games'.
www.develop-live.com

'CHAMPION YOUR GAMES'



DONG NGUYEN IS in no way the first developer to suffer his game being copied.

Back in 2012, Spry Fox accused 6waves of copying its popular match-three puzzler *Triple Town* with the similar title *Yeti Town*.

After a legal battle, the two firms settled out of court and 6waves transferred the *Yeti Town* IP to Spry Fox.

Given his previous experience with this issue, we asked Spry Fox CEO David Edery for his thoughts on the *Swing Copters* case.

"I'm disappointed, but not surprised in the slightest," he told *Develop*. "The more high profile a game is and the simpler it is, the more likely it is to be cloned. This is one of the reasons that Spry Fox has shied away from the really simple games we used to develop. What we can do with four months of experimentation and dedication, someone else can – and will – copy in a couple weeks.

"Sometimes clones have a negligible impact. I know some very successful mobile developers who have a very strong fanbase and great game brands, and feel they can basically just ignore clones as a result.

"But for less established developers, a clone might overshadow the original game, and that can really hurt. And sometimes the clone reaches important platforms before the original can be ported, and in some ways that hurts most of all, because not only can you potentially lose a big piece of the market for your product, but players who don't know any better will accuse you of being the copycat when your port launches after a clone.

"I'm not sure it is preventable. But the industry can help developers affected by it by championing original games. That's really where Google and Apple can – and often do – make a difference; they can raise up original games by featuring them. They certainly did that for *Triple Town* – I'm pretty sure the game would have been a flop without the support of Apple and Google."

DEVELOP DIARY

Your complete games development events calendar for the months ahead

DIARY DATES

Games Retail 2020
September 16th
London, UK
kathryn.humphrey@intentmedia.co.uk

SEPTEMBER 2014

REEPERBAHN FESTIVAL
September 17th to 20th
Hamburg, Germany
www.reeperbahnfestival.com

GAME MUSIC CONNECT
September 24th
London, UK
www.gamemusicconnect2014.com

OCTOBER 2014

DEVELOP LIVE
October 2nd
Edinburgh, Scotland
www.develop-live.com

GAME EXPO SCOTLAND
October 4th to 5th
Edinburgh, Scotland
www.gameexposcotland.com

BACKSPACE FESTIVAL
October 25th to November 2nd
Royal Leamington Spa, UK
www.backspaceuk.com

GAME CONNECTION EUROPE
October 29th to 31st
Paris, France
www.game-connection.com

DEVELOP QUIZ
October 30th
Royal Leamington Spa, UK
Jess.Farnan@intentmedia.co.uk

EVENT SPOTLIGHT

DEVELOP LIVE

DEVELOP LIVE IS a brand new one-day conference for games developers taking place in Scotland later this year.

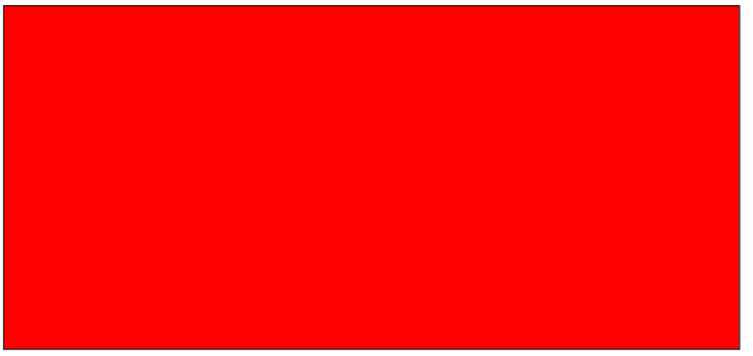
The event will comprise of a series of lectures and panels covering both international and local issues.

On-stage content will be curated by the editorial team, making this the first event of its type brought to you by the people behind *Develop*.

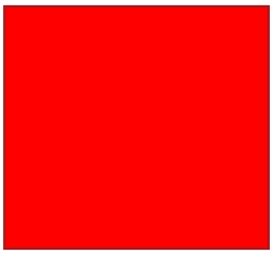
Announced speakers so far include author Christopher Brookmyre, as well local firms DeltaDNA, Outplay Entertainment, Chunk and Ludometrics. More announcements will be made soon.

Tickets cost £149 and can be booked through **www.develop-live.com**. Discounts are available for students, indies and TIGA, UKIE and SGN members. Email **James.Batchelor@intentmedia.co.uk** for details. Competitive sponsorship packages are also available. For more information on getting more involved with the event, please contact **Alex.Boucher@intentmedia.co.uk.**

Game Expo Scotland is a media partner of Develop Live, with Abertay University as event partner.

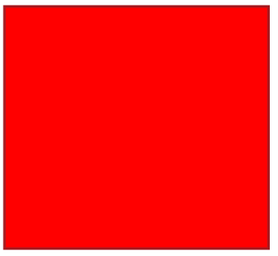


COMING SOON



DEVELOP #154
OCTOBER 2014

- Monetisation: Experts' secrets revealed
- Region Focus: Italy
- Work-for-hire
- Narrative and storyboarding



DEVELOP #155
NOVEMBER 2014

- Start-up special: How to open a studio
- Education and training
- Game service providers
- Guide: The best mobile development tools

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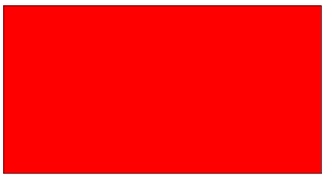
AT A GLANCE



SEPTEMBER 8TH
International Literacy Day
The *Develop* team's post-mortem reveals no mistakes whatsoever.

SEPTEMBER 9TH
Destiny
Bungie is on a mission to reinvent gaming. By making a shooter.

SEPTEMBER 13TH
Roald Dahl Day
Crack out the Wonka bars and celebrate the author's birthday.

SEPTEMBER 18TH
Scottish independence referendum
Aye or nooo for Scottish independence?

SEPTEMBER 24TH
Game Music Connect 2014
A day dedicated to discussions about music and its role in games.

SEPTEMBER 26TH
FIFA 15
Wave goodbye to your significant other as you play the Beautiful Game.

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//COMMENT: BUSINESS

Funding games: the experts' advice

Nick Gibson asks investors what they look for when considering financing studios and their games

Nick Gibson says many investors are paying less attention to a team's first project and are instead focusing on their potential and ability to adapt

AS PART OF the research for our recently released sources of UK games finance guide for TIGA and Google, we interviewed a wide range of funders and funding facilitators.

Several of our questions prompted some very practical advice on how UK games companies should – and should not – solicit for funding. Their advice was genuinely useful so this month I want to highlight and expand on the three most common themes.

TEAM > PROJECT

Many studios make the erroneous assumption that it is the dazzling quality of their game in development that will secure them funding. While acknowledging that the originality and commercial potential of any software in development plays a role, it is the quality of the team that is of paramount importance for funders.

As games angel investor Chris Lee points out: "I tend to think a lot less about the projects and almost exclusively about the team," a point on which games VC London Venture Partners' David Lau-Kee agrees: "It's all about a rounded, business-driven team."

These sorts of experienced games industry equity investors are investing with a long-term view. They aren't necessarily expecting the first game to be a success and so need to have confidence that the team has the skills and drive to adapt, sometimes to outright failure, and persevere, even if it means taking the company in a radically different direction – scenarios experienced by many of the largest developers such as Supercell, Kabam and King.

> ***"Detailed forecasts and potential investment return details did not rank highly for investors."***

KNOW YOUR MARKET

Another common theme was the importance of applicants being able to demonstrate not just a clear market opportunity for their company but also a detailed understanding of this opportunity. Again, this goes beyond the virtues of a single product.

"I need to be excited about the genre vertical and believe there is an opportunity to capture market share or even dominate a sector. I don't bet on a specific project to achieve that," Lee explains.

In addition is the need for a sophisticated understanding of the opportunity, i.e. the dynamics of the sector being entered, the competition, the target audience and the strategy being employed to exploit the opportunity. Games project finance specialist Standfast Interactive's Enda Carey highlights one of the biggest problems it faces.

"Despite the fact [our funding] gives them the ability to self publish, most developers don't know where to start," he states.

PREPARATION

The third major theme was the importance of preparation by funding applicants. Equity crowdfunding platform Crowdcube's Luke Lang sums it up: "Preparation is vital for success so it is frustrating when people don't think things through or put the effort in."

Carey advises companies seeking funding to prepare "like they would with a job interview – understand the company they are dealing with." For Standfast's project finance model, the other major funding hurdle is when "developers don't understand our model and equate it to a publisher deal looking for signature payments and an inflated man month cost".

For early stage equity investment, a common mistake is to assume that investors are after a comprehensive business plan. For LVP, the ideal is an "outline deck" which "describes a fresh take, illustrates a clear understanding about how to move the needle, how/when to scale, shows ambition and drive, and gives us a sense that this is (or will be) a fully-rounded company".

Interestingly, the provision of detailed forecasts and potential investment return details as part of the funding pitch did not rank particularly highly for the angel and venture capital investors.

Most investors know that, for start-ups at least, such forecasts are pretty meaningless. In fact, forecasting huge growth rates, returns and investment multiples is "likely to put angels off" according to Chris Lee.

Being able to demonstrate an understanding of the business models employed and potential exit scenarios for the company, and not being unrealistic with financial forecasts, is usually sufficient.

Given that TIGA, in a separate survey, found that 61 per cent of UK studios had unsuccessfully sought third-party financing in the previous three years, this could be useful advice. For a detailed look at all the available options for raising finance for games, download our report for free at bit.ly/1kvDPJC. ■

Nick Gibson is a director at Games Investor Consulting, which provides commercial check-ups, strategy and data to games, media and finance companies.
www.gamesinvestor.com

//COMMENT: FUNDING

The dos and don'ts of crowdfunding

Team17's **Debbie Bestwick** offers expert tips on how to fund your indie projects

SITES SUCH AS Kickstarter, Crowdcube and Indiegogo all offer budding entrepreneurs the opportunity to raise capital in order to fulfill their dreams. Each has it's own unique differences but they all boil down to the same basic premise: you hit your funding target, take the money (minus a fee) and all your backers get what they paid upfront for.

That's the way it should work and for the vast majority it does, but there have recently been some high-profile examples of where things have gone wrong.

Chris Davis from *The Escapists* dev Mouldy Toof, Sonny Meek and Dean Foster from *Sheltered* studio Unicube and Ross Clarke from *TerraTech*'s Payload Studios recently shared their collective Kickstarter experiences.

UNDERSTAND YOUR FUNDING NEEDS

The first thing to remember is you're asking for money to fund a project, not a lifestyle. If you already have a job then consider what you'll need to fund your time to the project exclusively. Attempt to set your budget as low as possible, and try and forecast how long it will take to complete the game now it has your undivided attention. This will give you a baseline figure, but before you commit don't forget to add extras: software or hardware upgrades, a back-up system and so on.

Take a few minutes to check how other crowdfunded projects fared. Funding does have momentum that builds and backers are far more likely to support a title if it looks likely to hit its target and become reality. Payload's campaign threw up a couple of interesting facts: 27 per cent of the *TerraTech* backing came direct via Kickstarter and half of the overall target came in the final six days.

TIMING IS ESSENTIAL

It's all very well having a project on a crowdfunding site but you'll need to back it up with activity elsewhere. If you're planning on getting onto Steam, maybe tie in with the launch of your Greenlight campaign. If you're planning a demo then use it to give your campaign an extra boost towards the end.

Use social media to get your message across. Post on forums, email websites, hunt down journalists, phone magazines, attend events, make friends, and remember to include a link to your page with everything.

UPDATE REGULARLY

Be sure to keep everyone, especially backers, informed and updated on how things are going. Sure, a couple may ask you to stop spamming but the vast majority will welcome news of progress. Make sure you update your page to reflect any changes to the original plan. If you can, use video to demonstrate any updates and post them everywhere.

PLAN YOUR STRETCHES IN ADVANCE

Plan in extra content, additional game mechanics and even more platforms as rewards for stretch goals. Just make sure that the extended funds reflect the additional effort and make sure they are commercially viable. Don't be afraid to add more stretch goals if you begin to break through existing ones.

DON'T RAISE BARRIERS TO ENTRY

Plan your tier rewards carefully. Maybe offer a limited number of early adopters a chance get access to a beta version of the game but never ever limit the number of backers who simply want to buy a digital copy.

DO LIMIT PHYSICAL REWARDS

It may seem cool to offer phyiscal rewards, but it can be time-consuming and costly. Naming characters after backers, adding them into the credits and offering exclusive in-game items are all much easier to do. If you must provide a physical reward, try exclusive poster prints – they won't cost the earth.

Done well, crowdfunding is a great way for indies to fund projects. Time spent developing a strategy and preparing your page will pay dividends in the long run, allowing you to focus on the game and giving you time to spend breaks publicising it. ■

High-profile crowdfunding projects like Yogventures (above) highlight the pitfalls developers without a clear strategy and business plan can fall into

Debbie Bestwick is CEO and one of the founding members of Team17. She pioneered the company's leap into digital publishing. **www.team17.com**

//EXTRA CONTENT ONLINE

"A GDD should be there to keep you on track, to make sure that you achieve the goals you set out."

How to write a useful game design document

Ella Romanos, Strike Gamekabs

http://deve1op.net/1o58v5w

"There's thousands of games currently on the market that could be referred to as an art game – yet people don't like to tag their work as such."

Art gaming and emotive creativity

Lilly Devon, Little Worlds Studio

http://deve1op.net/1ndr4ot

"It's critical that as we create another world for players, we respect them more as real people within our world rather than just as gamers."

VR dev responsibilities

Katie Goode, Preloaded

http://deve1op.net/1oRxrBB

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GAMES

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IGN

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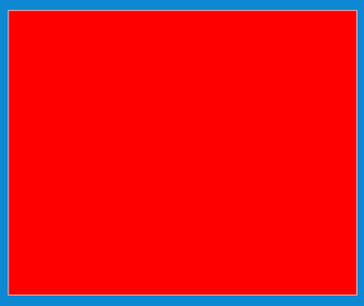

THE MUSIC MAKERS:
We speak to composers about the evolution of interactive music in video games
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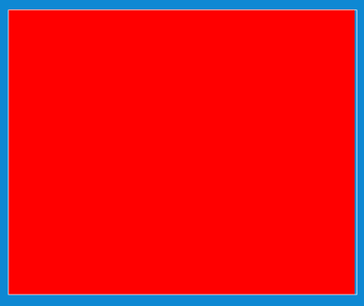

MEET THE WARLORD:
Develop catches up with Victor Kislyi, CEO of World of Tanks firm Wargaming
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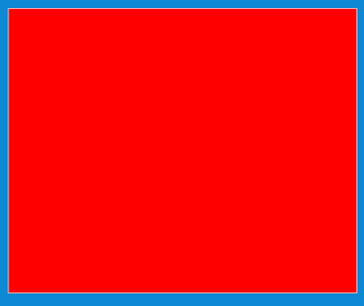

LIVERPOOL RISING
Our monthly region focus returns with a five-page look at this thriving dev hub
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The return of Romero

John Romero, co-founder of id Software and designer of Doom, is once again making a first-person shooter – and the legend told **James Batchelor** that good game design will be more important to his success than next-gen technology

IT'S BEEN 14 years since the man credited with defining the first-person shooter released one of the genre's biggest disappointments of all time. Now John Romero, designer of both the pioneering *Doom* and the poorly-received *Daikatana*, is stepping back into the shooter arena once more.

The veteran developer revealed during Gamescom last month that he is currently working on a brand new FPS. He has yet to reveal any more details, other than that he is collaborating with a concept artist and has some designs in the works for the main character of the unannounced project.

Even with these tidbits of information, expectations are already rising. After all, this is the man who brought us *Wolfenstein*, *Doom* and *Quake* – some of the most influential titles in the history of our medium. And with the lessons learned from *Daikatana*, plus the advances in technology in the decade-and-a-half that has followed, Romero returns to the genre with the skills that defined it, focused and without the marketing hype.

Veteran designer John Romero (above) says he is under no pressure to top his previous titles like Doom and Quake

THE FUTURE OF THE FPS

Cynics would argue that there is little ground left to break in the shooter genre. *Call of Duty* and *Battlefield* are in danger of stagnating, and new shooter IPs have yet to match the success of these two franchises. Bungie hopes to breathe new life into the genre with this month's *Destiny*, but are developers are running out of ways to reinvent the shooter?

Romero doesn't think so.

"There are unbelievable amounts of new stuff to do in that genre," he told *Develop*. "The idea of a shooter is running around with

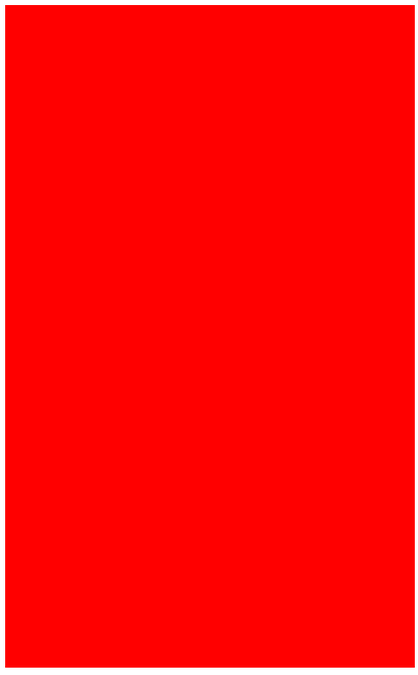
Romero says new tech has done little to advance the work he did in Doom (above) and Wolfenstein (right), instead just making games faster and shinier

weapons, in first-person, blowing things away. But what are you really doing? What is the world like? Who are you, and what do you care about? What are you doing in the world that's different?

"Take something like *World of Warcraft* – what if that was a shooter? You have a giant world full of quests, and tons of people with PvP already in the game. If *World of Warcraft* was a shooter, that would be brand new – nobody would have seen something that big and that cool.

"And it wouldn't be anything like *WoW* because of the nature of being a shooter – it would probably concentrate on a lot of areas that were similar to *Team Fortress 2*. Perhaps villages would become like *TF2* levels, where you would try to score as much as you could before deciding to move on. Or that area would have specific goals, like taking out five snipers and two demo guys to retrieve some key items. Perhaps once you've exhausted that village, you could go to another one down the road. And maybe the planet's full of them – nobody's played a game like that.

"Shooters have so many places to go, but people just copy the same thing over and over because they're afraid to try something new. We've barely scratched the surface."



> ***"Minecraft is the Wolfenstein of creation games – but we need devs to push that idea forwards."***
>
> John Romero

While it's impossible not to get caught up in the potential of Romero's brainstorming, there is still an elephant in the room: his reputation and past success. Despite the vast number of titles he has worked on, both his hits and misses, Romero is continually tagged as 'the *Doom* designer'.

But Romero tells us he has no problem with this, or the pressure seemingly associated with it: "I've made hundreds of games, but it's the shooters that people really like so those are the ones they'll talk about mostly – and that's fine. I've no problem with that.

"After making *Quake*, when I was making *Daikatana*, there was pressure to make something great, but after that it was over, there was no pressure. And there's no pressure for me to make something better than *Doom* or *Quake*."

THE POWER OF CREATION

There's another first-person title that Romero draws inspiration from, but it's not one of his previous shooters. And as big as this game has become, the designer believes we're only seeing the initial impact that it will have on games development.

"Look at *Minecraft* – it's unbelievable that it was made by one person, right?" he says. "And it shows there's plenty of room for something that will innovate and change the whole industry.

"If some brilliant designers take the lessons of *Minecraft*, take the idea of creation and playing with an environment, and try to work out what the next version of that is, and then if other people start refining that, it'll take *Minecraft* to an area where it will become a real genre, the creation game genre.

"I think we're seeing the start of that genre – *Minecraft* is the *Wolfenstein* of creation games – but we need people to push that idea forwards, not just make clones for a quick buck. We need people to take those design elements that make *Minecraft* great and add to them, push them to the next level."

Romero adds that it's not just *Minecraft*'s premise that is game-changing but also the success and influence it has had. In just a few years, the title has generated revenues and gathered enough registered users to rival the latest edition of *Call of Duty* – despite the fact that the latter had a colossal marketing budget to back it up.

"It shows that a title doesn't need to be from a giant publisher like Activision to be called a 'real game'," says Romero. "It has to be something that has a huge community around it.

"There's no *Call of Duty*-Con, but there is a MineCon, a QuakeCon and a BlizzCon. If a game makes a bunch of money really quickly, that's a testament to the marketing power of the company and not really the quality of the game.

"*Call of Duty* is enough of a deathmatch game to keep people coming back to it year after year, but the design isn't breaking people's brains – it's expected, in the same way *Madden* is. You see it, you know what it is, and you know the next iteration is going to be like the previous one but in a different location, maybe a different time period. It'll have guns and a lot of the same features."

This leads Romero onto the main message he wants to share with us: the key to success and advancing the industry is not 1080p graphics, jetpacks and other incremental new features, but the design at a game's core.

Developers today are arguably luckier than those like Romero that started in the 1980s. Tools are easier to use and more accessible – particularly in the engine space with products like Unity and Unreal Engine – enabling any bedroom coder and one-man studio to create games of a comparable quality to those produced by teams of hundreds.

PlayStation 4 and Xbox One are the most advanced home consoles to ever grace the living room, PCs are becoming increasingly powerful, and even smartphones and tablets can rival traditional gaming platforms in how well they present the latest titles.

But there is a crucial truth that some developers have yet to grasp.

> ***"We've barely scratched the surface with shooters, but people are afraid to try something new."***
>
> John Romero

DISTRACTED BY TECHNOLOGY

"It comes down to design, not technology," says Romero. "New consoles let people create more polygons on the screens. They let you do more with AI because they're faster. But they don't make good design.

"*Minecraft* doesn't care about how many shaders or triangles or stuff, because it doesn't matter. *Tetris* did not care about how many polygons were on the screen. It's nice to have the good technology, but people that develop know the tech race is over.

"Now we have really fast computers, really fast phones. Nobody wants to rush out and buy the next console so that they have something no one's ever seen before, because everybody's seen it plenty of times – it's just faster now.

"Every developer has the ability now, with the platforms that are out there, to make something that looks really good. They can design things that were not possible in the '80s because you've now got high-speed internet, hard drive space, lots of memory and so on."

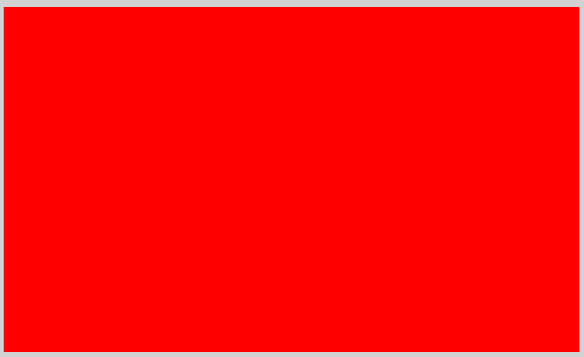
Romero adds that the premise of good games design is not something you can

Main: Call of Duty's design isn't "breaking people's brains", according to Romero, which is why each new iteration isn't as revolutionary as they could be

MORE THAN SHOOTERS

DOOM DESIGNER JOHN Romero has game design ideas that stretch beyond bullets, gore and death. The industry legend has worked on a series of mobile, social and browser games in the last ten years. In fact, his Facebook game Ravenwood Fair peaked at 25m active players – more than *World of Warcraft*.

Today, he is working on some rather unexpected projects. First up is a smartphone re-release for his classic 1988 platformer *Dangerous Dave* (*pictured below*).



"I've had tons of mail from people saying they want to make a mobile version of it," he explains. "Over the years, so many people have sent me screenshots of what they've worked on – and I'm like ' don't do that, I'm going to do it myself'.

"I'm about to re-release *Dangerous Dave* for iOS and Android in the exact same form that it appeared on PC back in 1990. And then I have a HD version with really cool pixel graphics, real sound effects, music, all that kind of stuff.

"It's a retro game, and people have been begging for the original so I'm going to put it out there for free and let people play it again. And if they like the idea of the HD stuff, I'll charge 99 cents for that."

Meanwhile, Romero is also exploring educational games. Back in 2005, he set up a studio that worked on a *World of Warcraft*-esque title for children that centred around maths education. The project – codenamed *Redwood* – was ultimately cancelled, but now Romero is revisiting the concept.

"We spent $26m and four years working on this thing, and then we had to stop," he said. "But the design team did a lot of really good work, so we're basically taking the learnings from *Redwood*.

"An iOS game based on of one of the main interactions has been released by another firm, and brought to Android and Windows Phone, and it's just maths-type grinding stuff for kids. To me, that's not as much fun – I need to care why I'm doing things, so I'm making a game with that same company where those maths interactions are available if you want to do them."

simply read up on, or inherit by building on the foundations of other titles. Instead, it's something developers earn after a lot of time and hard work.

"It requires a lot of playing, understanding and making games," he explains. "Usually you make a lot of games before you actually make something amazing. *Minecraft* was probably 'Game Number 30-something' for Markus ['Notch' Persson], and everybody's like that.

"If people challenge themselves to do something really great, to make the greatest X-style game ever, then maybe they'll achieve that. You can't just make a game and suddenly it'll be the greatest thing ever – that never happens. If you try really hard to create something great, you have a better chance of making something industry-changing rather than accidentally doing it."

GRAND DESIGNS

So given his extensive experience of games development – and the lessons learned not only from his '90s masterpieces but the dozens of games he has made since – how does the man who made *Doom* define good games design?

"Something that gives people a fun experience," he says. "Players should be doing an action, a core loop, that is really interesting and fun to them. They should be interfacing with the environment in a way that makes sense to them and is fun. Interactions with the game should generate good feedback and, hopefully, tiered rewards that give people more of a goal to reach higher-level stuff."

Design will obviously depend on the nature of the game, he adds. Titles like *World of Warcraft* and *Grand Theft Auto*, with their large open worlds, will have incredible amounts of goals and things to do, but gamers should also have the freedom to just have fun and play without completing tasks preset by the designer.

"Games provide an environment for people to do things that please them, and so the essence of game design is to find out what are you trying to make, and is that a fun thing to do?" Romero continues.

"And hopefully you'll be doing something new that people haven't done before. That's what's driving the industry forward: doing something that gamers haven't seen that might lead to something bigger.

"When we made *Hover Tank* and *Catacomb 3D*, that was leading up to *Wolfenstein*, which led up to *Doom*. You have to refine things. So for people to make sequels to something that they thought was a brand new way of playing games, that's cool because they're trying to refine the fun, the feedback and what you can do with that.

"The question is what is fun, and how do you make something fun out of nothing? That's what games design is all about."

And as spectacular as today's high-end best-selling blockbusters can be, Romero is most impressed by the innovative design ideas coming out of the growing number of indie studios.

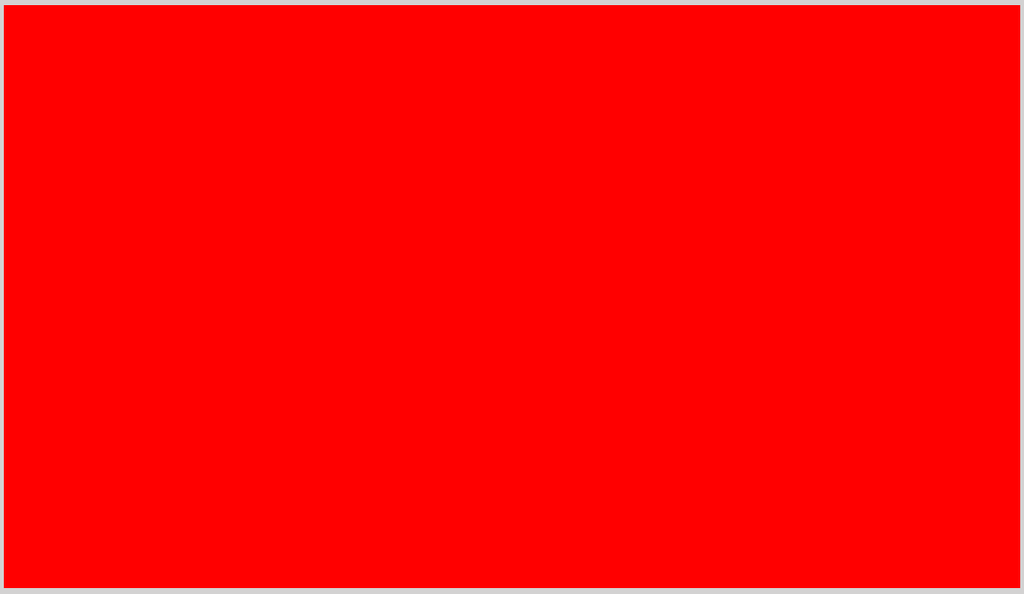
What some of these developers lack in experience, they make up for in fresh ideas and ambition, and these are the companies that are going to achieve what he and his fellow id Software developers did with titles like the original *Doom*.

"Indies are the ones that are taking chances," he says. "They're the ones who are making new games and play styles that will eventually turn into triple-A.

"Games like *Minecraft* are the things that keep the industry alive, that keep people positive and excited about games. It just shows that there are unbelievable amounts of untapped creativity out there that we're still working towards." ■

> ***If you try really hard to create something great, you have a better chance of changing the industry.***
>
> John Romero

ROMERO ON THE NEW DOOM



JOHN ROMERO MAY have worked on the pioneering *Doom* games of the 1990s, but since the turn of the millennium he hasn't been involved with any attempts to revive the series.

This year Bethesda announced a *Doom* reboot is in the works for Xbox One, PlayStation 4 and PC, with a trailer showing a much darker vision for the iconic FPS franchise. So what does *Doom*'s daddy think of this new offspring?

"I haven't seen the trailer yet," he admits to *Develop*, "but it sounds like it's going to be really great. I did see people's reactions to it – they were way off the chart.

"I know that it's fast, it's a skilful game, and it's not a bullet-sponge title. Fast and skilful are what *Doom* is about, so the fact that they put those things in there and then added a bunch of new stuff that blew people away is really going to be the thing that saves it. I'm hoping it shows id Software is back."

Minecraft (below left) is a prime example of how indies are driving games design forward, but more devs need to build on its ideas rather than cashing in with clones, Romero says

The music makers

Advances in technology allow for more sophisticated gaming soundtracks, but hiring an orchestra is not enough to compose a memorable score. **James Batchelor** talks to leading composers about the challenges of interactive music

THE GAMES OF today are often praised as highly for their soundtracks as they are for any other aspect.

From the emotional cues in Gustavo Santaolalla's score for *The Last of Us* to Garry Schyman's BAFTA-winning work on *BioShock Infinite*, and even to the striking and unique tones of *Monument Valley*, *Device 6* and *Tearway*, game music is now as diverse as that of any other entertainment medium.

With chiptunes now a distant memory – aside from those found in retro-styled nostalgia titles – composers and developers are taking the use of music much more seriously. It's a welcome sign of maturity from an industry often thought to be lacking any.

"In the last few years, music for major console games has grown more sophisticated, engaging some of the best music composition, recording and production talent on the planet," says John Broomhall, composer and founder of Game Music Connect.

"It was always a given that technical fidelity would blossom to today's high standards. But it's very encouraging to see growing sophistication in the way music is used."

Jim Fowler, composer and music production supervisor at Sony Worldwide Studios, agrees and adds that the improved technology available has enabled studios to get more creative with their music: "As with games themselves, I feel like there's less emphasis on what's technically possible and more on what's emotionally possible.

"For a lot of games now, data size isn't a big issue and audio middleware is mature enough that most things you think of are achievable.

> ***"There are many exceptions but historically music has rarely been integral to games design."***
>
> James Hannigan, Jagex

"Music discussions are now about how can the music best serve the gameplay, the story or the mood of the game. And it's exciting, as a composer, not to have to overly worry about technical constraints."

INDIE MUSIC

Interestingly, it's not the long-running and publisher-owned studios that are pushing the boundaries in video games music – although they are certainly moving the goalposts when it comes to quality. Instead, it's the newer, indie developers that experiment the most, despite limited budgets and manpower.

"Where people care and can find the right resources, you end up with a *Monument Valley* or *Device 6*," says Broomhall.

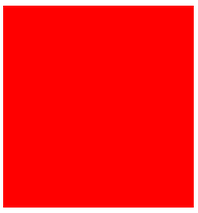
"Music and audio can provide massive 'bang for buck' in enhancing the overall gaming experience and it's very interesting to see indie games from *Beatnik Bandit* to *Dear Esther* being nominated for BAFTAs, alongside premium console titles."

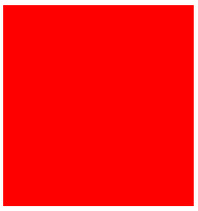
Jagex's James Hannigan, who wrote the scores for *RuneScape* and the upcoming *Transformers Universe*, agrees that it's refreshing to see indies take music more seriously than perhaps some of the larger studios ever have.

"There are many, many exceptions but historically, music has rarely featured as an integral part of game design from the outset, and has often been a bolt-on or an afterthought in development – even if it has been greatly appreciated by gamers," he says.

Hannigan is also a major proponent of interactive music, cues that change depending on in-game events or even the player's position and actions. While film scores are

Music experts John Broomhall (top) and Jim Fowler (bottom) say devs are becoming more adventurous with how they use music – particularly indies





Top to bottom: The Chinese Room's Jessica Curry and Jagex's James Hannigan

Right: Independently developed titles such as Device 6 (top) and Dear Esther (bottom) have experimented with how music can affect both gameplay and the player

Below Right: The Last of Us' soundtrack, composed by Gustavo Santaolalla, is one of the game's most praised features

written specifically to give power or evoke emotion from key moments – and games can certainly still accomplish this – perfecting this interactivity is crucial to the medium, according to the Jagex composer.

"There have been advances in interactive music in recent years – not as many as people think, as it's been going on for decades – but a seamlessly delivered interactive soundtrack should never take precedence over a memorable music score. There's often a fine line to walk between delivering interactivity and musicality in games."

Jessica Curry, composer at *Dear Esther* dev The Chinese Room, agrees: "We're still taking those shaky baby steps. It's such a steep learning curve, especially when it comes to nailing that elusive blend of interactivity with meaningful musicality."

CHANGING TUNES

Interactive music isn't just limited to new layers coming in and out of a looped tune at given points. Sony's Fowler says there's real potential for composers to come up with soundtracks that mould themselves around any player's individual game experience.

"This can be through using smaller building blocks that can be recombined at runtime into bespoke pieces, or having increased numbers of transitions based on particular modulations that allow movement between moods and themes in a seamless fashion," he explains.

"And maybe you could even have whole pieces of music that will only play in a particular set of circumstances. That may mean that some people don't hear what you've written but that level of tailoring music to create an individual experience is where interactive music is at its most exciting."

Perhaps the most important factor of game music is quality – but that doesn't mean getting the London Philharmonic on board for every title you produce.

"Always strive for the best quality the budget will allow," explains Fowler. "People expect game music to be professionally produced, whether it's an 8-bit score or a gargantuan symphonic epic. This might mean making sacrifices. If the budget won't stretch to a full orchestra then maybe think about using just strings – what could you achieve with that sound?"

> ***"Tailoring music to create an individual experience is where interactive music is at its most exciting."***
>
> Jim Fowler, Sony WWS

Hannigan concurs, adding that if you are aiming for an orchestral sound, getting time with the real thing should be a priority.

"A live orchestra is going to add value and, for me at least, would be preferable to a sampled orchestra," he says. "A hybrid approach can also work well. For example, a combination of synths, samples, smaller ensembles or soloists. There are no rules."

However, Curry says that reduced public exposure to orchestras means synthetic alternatives remain viable: "I am loathe to say this but many people whom I play sampled music to can't tell that they're not live instruments. Perhaps this is because not so many people go to hear orchestras any more and are also very used to sampled instruments from TV and games."

She adds: "It's also important to consider the amazing work being done by digital musicians – there is no need to feel constrained by having to use a classical orchestra.

"But for me, an old-fashioned girl, there is no way you can replace the music that has been crafted in a bespoke way for the game."

MUSICAL MAGIC

The industry's growing love of remakes has highlighted for many composers just how far games music has come in the last few decades – even the most experienced ones.

"Music in games is always changing, but in several directions at once," says Hannigan. "There's no 'right' way to create music for games. The needs of a triple-A 'filmic' blockbuster may lean towards a Hollywood score, but the same wouldn't apply to *LittleBigPlanet* or an iOS puzzler, which takes a quirkier and more unique approach."

Broomhall adds: "My original game music roots are in creating midi scores for classic PC titles like the original *XCOM* and *Transport Tycoon*, so it's amazing how things have developed – from soundcard to symphony. The original *Transport Tycoon* was nine-note polyphony on an FM soundcard, whilst we recorded some of San Francisco's finest orchestral musicians at Skywalker Sound for *Forza Motorsport 5*.

"Game music has been on a very exciting journey and it continues as composers and audio directors bring further interactivity into music systems to help the score respond even more closely to gameplay." ■

MUSIC TO YOUR PEERS

WE ASKED OUR expert composers if they had advice for developers that are looking to raise the bar for the music in their games. Here's what they had to day:

- Employ someone with experience and understanding of the music that's most appropriate for your game. This shouldn't just be based on their technical skills – consider how personal and emotionally-motivating their work is.
- Listen to the composer. Let them define the musical vision for your game, or at least include them in the process, rather than making all the creative decisions without them.
- Bring your composer into the project as early as possible during a game's development. Their work will be based on everything that is decided at this stage. This will also give them more time to prototype and iterate as they seek that perfect musical style.
- Research what service providers are available in the marketplace, whether you seek them for further advice or the creation of music and other audio content.
- Be open-minded, and don't worry too much about adhering to the expectations of your game's genre. Feel free to experiment.
- Make sure you budget for music, and be realistic about the costs involved. If external, the composer will need paying.
- Don't just instruct them to be 'epic' or 'cinematic'. Just don't.

Musical evolution

This year, we added the brand new Musical Composition category to the Develop Industry Excellence Awards. **James Batchelor** catches up with Jamie Hamshere, who won the prize for his track 'Noise Pulse' from Llamasoft's TxK

How do you feel about winning the first Develop Award for Musical Composition?
It's a privilege to make a bit of history as the first to step up to claim the prize for a new Develop Awards category.

I've been into Jeff Minter's games ever since I played *Llamatron* on the Atari ST when I was 11, so mounting the stage at such a prestigious event to represent a Llamasoft game was pretty special, too.

Why do you think your track was chosen?
Tempest 2000 – TxK's ancestor – is legendary for its stomping early '90s rave soundtrack, and Llamasoft has a history of having large doses of daft levity in all of its games.

I consolidated both of those concepts by combining uplifting '90s euphoria with an enthusiastic vocal sample of unique game designer, artist, and musician Dennis Greenidge, taking his star turn in the middle of the track. When slotted next to the game's crazy neon vector-style graphics, it backs the action amazingly well.

What do you think the biggest challenge facing games composers is today?
The same challenge that has always needed consideration: make a soundtrack that doesn't get irritating after the 100th time you've died and had to restart a level, or spent numerous hours plugging away at the same puzzle.

It would be easy to cop out and just create a load of background mush to minimise the risk of repetition but that's appropriate only in a very few cases. Usually it's the soundtrack that is the thing that has to draw you back in and keep the interest going. So finding out what the game is supposed to be about and making the musical style, sounds, and melodic themes cohesive and relevant is the crucial thing.

How has video game music, and the process behind composing it, changed over the past five years?
The notable difference for me has been in the style of the music itself due to the rise of indie developers and their embracing of retro and the creation of some very offbeat and interesting games. This has given space for the soundtrack to be something more than homogeneous emotion-manipulating swelling orchestral stuff serving as ambience that only works in relation to the game. Instead we're hearing some quite remarkable chiptune-style music that draws on catchy melody, the sort of thing you find that you're whistling to yourself after playing the game.

> ***"Unless the project calls on it, then don't permit yourself to get overly worried about using the most expensive software."***
> Jamie Hamshere, composer

How do you expect it to change in the next five years?
With tools like FMOD Studio, there will probably be more use of adaptable music, which isn't necessarily a new approach but something that's now more easily achievable across all platforms. I think that kind of flexibility for audio is vital in assisting to provide the kind of experience that devices like the Oculus Rift and similar are capable of.

Do you think music is overlooked or an afterthought in games development?
Composers are now being brought into a project much earlier in the development stage than they were in the past and do have a lot of input into the way the audio will tie in with the game, so I'd be surprised to learn that a soundtrack these days was just tacked-on at the end. The whole process is a far cry from the 1980s when a game was a week away from being mastered and someone would spend the weekend composing a few tunes and hop on the train back home with a cheque in their hand.

What advice would you offer to new video games composers?
Unless the project specifically calls on it, then don't permit yourself to get overly worried about whether you're using the latest or most expensive software or equipment. It's easy to get swamped by what's available. More often than not a limited set of parameters that you are comfortable with will get you working more simply and effectively than you would if you were otherwise lost in an ocean of options. ■

To create TxK's Develop Award-winning beats, Jamie Hamshere combined early '90s euphoria with a vocal sample from game designer Dennis Greenidge

We enable Stainless Games to make iconic videogames like Carmageddon:Reincarnation. We make sure they don't have to worry about their technology.

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New DAW rising

PopCap Games composer **Guy Whitmore** discusses the advantages of scoring your game, within the game

A COMMON PRACTICE for games composers today is to compose and arrange fully mixed music cues in Pro Tools or Logic, then have an implementation specialist drop those files into the game. Music integration, in this case, is seen as a basic technical task.

But to score a game with greater nuance, the composer would want to see the title in action while composing and arranging, working in a digital audio workstation (DAW) that includes robust adaptive features.

This new DAW exists; it is your game audio engine and its authoring tools.

In this scenario, music integration is a highly creative endeavour, where music arranging, mixing, mastering, and even composing takes place. *Peggle 2* utilised Audiokinetic's Wwise audio engine, which became the final stage DAW in the music production pipeline.

STARTING IN A TRADITIONAL LINEAR DAW

Working with captured gameplay video in your linear DAW of choice is a great way to develop thematic ideas and music design concepts. The results of this are two-fold; the first are audio-video demos that demonstrate music design concepts, and aesthetic direction. It was this type that sold the first music and design concepts to the *Peggle 2* team.

Second are the individual audio assets. Rather than creating fully mixed music cues, *Peggle 2*'s music was broken down into individual instrument stems, short musical phrases, and single notes. The criteria for how short or long a phrase or part should be was determined by how flexible it needed to be for the design and score to work. Smaller shorter elements are by nature more flexible than longer pre-mixed elements. My motto here is to make your music elements as small as you need them to be in order to adapt and work within your design, and no smaller.

MUSIC ARRANGING IN A NON-LINEAR DAW

While figuring out the *Peggle 2* music production pipeline, it became clear that the game audio authoring tool – Audiokinetic's Wwise – is also a very powerful music mixing and arranging tool. I thought of Wwise more as a full featured, non-linear audio workstation, with much of the same traditional functionality as a linear DAW, plus non-linear organisation, functionality, and logic.

> ***"I see the number of titles scored within audio engines growing as powerful new DAWs evolve."***
>
> Guy Whitmore, PopCap Games

After importing individual music assets into Wwise, they can be arranged within multi-track segments. Each track within a segment contains an instrument's samples and phrases, which can be easily edited. In this way I reconstructed the multi-track arrangements from the wave elements.

From there, I can create variations in any given instrument track. These segments can flow from one to another seamlessly and musically, and like the wave elements, are made as short or as long as necessary. This approach also allowed me to react quickly to changes in the game design or visual timing.

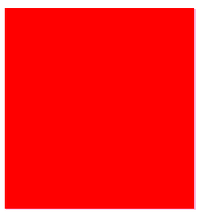
Once the temporary orchestral assets were finalised in Pro Tools, the process to record live orchestral elements began. In the studio, we most often recorded each instrument section separately so that each element could be easily edited. Rough stems from the sessions were brought into Pro Tools for editing and subtle mastering. The new, live orchestral elements then replaced the temporary ones in the Wwise project.

REAL-TIME CONTEXTUAL MIXING

After the 'music hooks' between the game engine and audio engine are integrated (via events, states, and parameters), the score can be mastered in real-time within the game.

While playing the game, not only am I making sure the music is working correctly, I'm balancing instrument volumes, adding real-time DSP, and surround panning. Effect sends on each track allow me to mix various amounts of real-time reverb or delay to each instrument, all in the context of the game's visuals and sound effects. This allowed music and SFX to play well together and give each other space.

The term 'scoring' includes the notion that music is synchronised in a purposeful way, with the visual elements of a game. And the only way to accomplish that is with a non-linear DAW that is working in tandem with the game engine. To that end, 50 per cent of *Peggle 2*'s music production happened within Wwise. And I only see that percentage growing as these powerful new DAWs evolve. ■



Guy Whitmore scored Peggle 2 within the game itself – a process that makes it easier to make the audio match with what is occurring on screen

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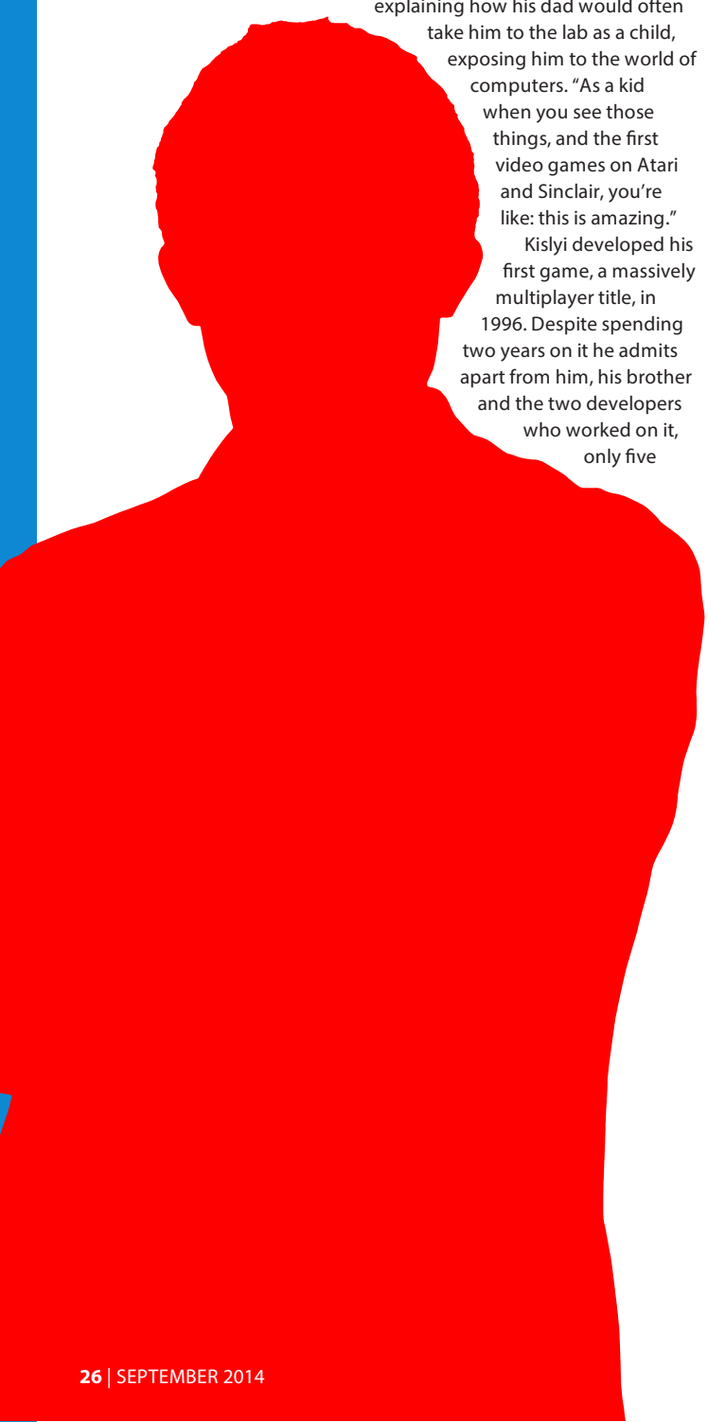
The chance meeting that made World of Tanks

Wargaming CEO Victor Kislyi speaks to **Craig Chapple** about his journey into games, and how he went from bedroom coding to creating the money-spinning free-to-play MMO that has taken over the globe

Victor Kislyi says it's important not to forget his long journey in games development before the runaway success of World of Tanks and the millions of dollars it has made



WORLD OF TANKS was officially released four years ago, and has become one of the most successful games on the planet.

But for Wargaming CEO Victor Kislyi, his journey into games and fortune started decades before the idea of *World of Tanks* was even thought of.

"My mother and father were more of a scientist profession," Kislyi tells *Develop*, explaining how his dad would often take him to the lab as a child, exposing him to the world of computers. "As a kid when you see those things, and the first video games on Atari and Sinclair, you're like: this is amazing."

Kislyi developed his first game, a massively multiplayer title, in 1996. Despite spending two years on it he admits apart from him, his brother and the two developers who worked on it, only five other people played it. But one of those players would one day change his life.

LAYING THE FOUNDATIONS

"You spend two years working hard and hoping for millions and then boom, nothing happens and you have five players," he says. "Well, good news is one of those five players liked the game and he and I were playing it for three more years, and then he became one of our game designers at Wargaming, designing games like *Massive Assault* and other titles.

> ***"As a kid when you see the first video games on Atari and Sinclair, you're like: this is amazing."***
>
> Victor Kislyi, Wargaming

"And he was the one who first came up with the idea of *World of Tanks*."

That man was Piotr Bitiukov, and despite the commercial failure of Kislyi's first game, their meeting would one day be worth hundreds of millions of dollars.

In 1998 Kislyi decided to form Wargaming, and worked on a number of titles including *DBA Online*, *Massive Assault* and *Order of War*, largely as a work-for-hire company.

After *Order of War*, the Wargaming CEO decided to shift away from physical retail due to rampant piracy and moved into digital, taking a risk and "burning all the bridges", cancelling contracts and going fully independent.

"We realised we couldn't keep going and making games as work-for-hire or coming up with our own ideas but with no success, or no huge success, where it just takes just one failure for the whole company to go down the drain," he says.

THE BIG DECISION

The studio then went to work on making the MMO that would make it famous, but during the first ten months it was a completely different game, instead focusing on fantasy.

It was then Bitiukov invited Kislyi to Moscow to meet him and another game designer, to convince the Wargaming to CEO to focus on tanks rather than elves.

"They gave me a very detailed explanation of why it would work, and I trusted them," he says. "It was probably one of my best decisions."

The *World of Tanks* IP, as it's now known, has amassed 100m registered players and continues to grow. Wargaming meanwhile has acquired companies such as BigWorld and Day 1 Studios and is working on brand new games.

The company also employs 2,500 staff, up from the 60 back in its work-for-hire days.

But how have the riches changed Wargaming's CEO? You could perhaps forgive him for being changed by a rush of millions. Kislyi says the last four years have been a "non-stop show", requiring hard work due to the fast success of *World of Tanks*, and says the important thing is to not forget the journey.

"Frankly speaking, it is not that I changed completely, I'm actually afraid to change completely," says Kislyi, offering a rare glimpse into the man himself.

"Because I know there is some magic in me, and yes in my old veteran colleagues, that brought us to this success. There was no money, there was something else. And while doing this corporate structuring, restructuring, governance, smovernance, we must not forget how it happened." ■

Integrated thinking

This year Unity's increasingly regular Unite user conference stopped off at Seattle, where **Will Freeman** met co-founder David Helgason to talk UI, video tools and traveling through time

IT COULD BE argued that every year the Unite story is much the same.

Fortunately for Unity CEO David Helgason, that story is one of a growing userbase, an increasingly powerful core tech, and an event that has evolved in eight years from welcoming 32 ticket-buying attendees to over 1,500.

Yet in Seattle this year, Helgason and his team had a little more to share than usual. Unity 5 may be some time away yet, and the next 'dot release' isn't even quite upon us, but with the engine's new UI system finally in public beta, a fresh acquisition fuelling a new cloud-based development service, and a demo of a mysterious timeline-based vision for Unity's future going public, there's much to discuss.

Addressing an enthusiastic crowd at Unite 14's opening keynote, Helgason suggested that as the demands on developers change, Unity has had to adapt to offer 'more than an engine'. Today, a middleware provider like Unity must help devs do more than implement pathfinding, animation and lighting effects.

"We've thought about ourselves as more than an engine for a really long time," muses the CEO. "That really began formally with things like the introduction of the Asset Store in 2010. That's certainly closer to being an engine than things like an ad service, which we announced at Unite, but we've always thought about democratising games development as including the whole process of making and sharing a game."

And developing a game, says Helgason, is today split into two distinct phases. "There's making the game," he continues. "That is hard enough. And then there's connecting with an audience. And by that I mean people finding a game, telling their friends, the developer making money from that, and getting data from that to improve the game. That's what we have to help developers with if we are going to help them bring their idea to be a success, so we have to offer more than just an engine as it used to be understood."

CLOUD AND CLEAR

The result is the newly announced Cloud Build element of Unity, which adopts the established continuous integration model of development famously favoured by web developers across the globe.

> ***"When you need to move forward on something, a good acquisition can be like time travel."***
>
> David Helgason, Unity

The cloud-based approach strives to save studios effort in building, testing, versioning and sharing games. It's also a system designed to enable pan-disciplinary collaboration, along with post-release management and implementation of Unity projects, and it's come about through Unity's latest acquisition.

"Sometimes you have to acquire," explains Helgason of picking up Austin, Texas outfit Tsugi. "Partnering only works in certain cases, and we do it when it's right. We license PhysX, Speedtree, Umbra, Enlighten and so on, and that's great. But when you need to move forward on something you are working on, a good acquisition can be like time travel."

It's a slightly offbeat way to explain how Tsugi became the rebranded Unity Austin studio, so Helgason takes time to explain.

"What I mean by that is that at some point we have to decide there is something we need to be really good at," he says. "Take animation, for example. At one time we knew Unity had lacklustre animation tools. They were written by ourselves in a basement, and we didn't really understand the problems we were

Unity CEO David Helgason (above) made a raft of announcements at Unite 14, including its new Cloud Build platform and the upcoming Director Project

Unity's Cloud Build services are designed to help make the process of building, testing, versioning and sharing games easier for studios

addressing. Then years ago we met these amazing guys in Montreal called Mecanim.

"They know more about character animation than perhaps anyone in the industry, and they did at the time. So we looked at them, and we could have said: 'well, in 15 years we will be as cool with animation as they are'. Or we could acquire them.

"Fortunately they were excited about joining us and about our vision. And the moment we acquired them, it was if Unity had travelled back in time 15 or 20 years, learned all there is to know about character animation, and then arrived back at the moment where we were signing the deal as a world-class expert in animation."

A WARM AND GUI FEELING

The other significant news at Unite 14 was the announcement that Unity's long in-demand new GUI system is near completion, and ready for public beta. GUI, to the layman, seems like a straightforward business. Yet for Unity it's taken some time to get right, and the team are turning to open source thinking to help fine tune the solution.

"To create UI with good performance, good tools, simplicity and flexibility is difficult," confirms Helgason. "So we really took our time. When we started out we built a UI system without much wisdom. People got by using it, but we realised we needed a new system."

Never one to fear being candid about his work, Helgason admits the team trying to solve the GUI problem started and failed at least once more; maybe even twice. And as the userbase of Unity grew, the problem stayed the same. The only thing was, more people were now facing it.

"Eventually we finally got the right ideas in place, and even then it took a long time to move it to the point we're at now," offers the CEO. "Much longer than we expected, actually. But we've got there, and we're at a really strong beta. Now we're making it open source – and it's not the first or only bit of Unity to be open source, but it's a big deal that our UI system is open source.

> ***"Director is really about continuing the democratisation of video games development."***
>
> David Helgason, Unity

"We love open source, and we know there are pieces of Unity that can really benefit from it. We really hope this works, and there're other bits of Unity we'd really like to make open source. It helps us make a better product, and it helps our users make better games. That's why we've gone with an extremely liberal license, which is the MIT license. It means people can take what we have done and do what they want."

TIME FOR TIMELINES?

While further Unite announcements also revealed a new advertising and cross-promotion service named Unity Ads, significant progress with Everyplay, collaboration with Intel with a view to advancing the creation of Android-based applications on Intel architecture, work with Google to provide full support in Unity for Google's Android TV set top box, and a public preview of Unity 4.5 for Samsung smart TVs, it was a live demo of a new concept project that really stoked the crowd's excitement.

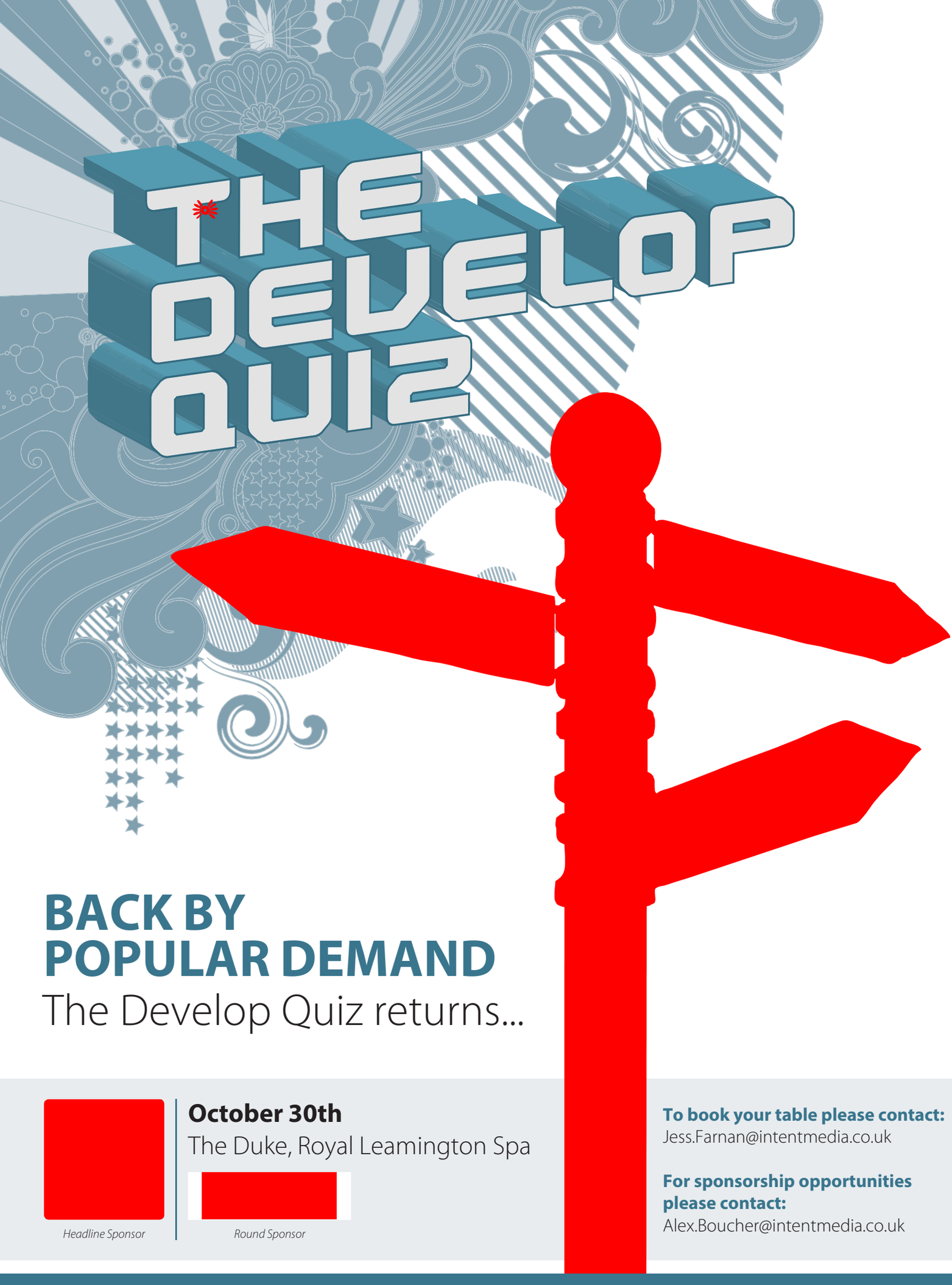
The Director Project is a proposed new approach for Unity; a completely fresh interface that could potentially change the way users interact with a game engine. It might not come to be, Helgason admits, but the Director Project is – for now at least – a tangible example of how games development in Unity may function in the future.

Essentially, the approach sees Unity's own interface ape the timeline model famous in the most dominant audio and video editing software, both professional and amateur. It is also reminiscent of some of Autodesk's own VFX solutions, presenting a front-end that may be more familiar to non-games development creatives than the current editor.

"Director, if it happens, really is about continuing the democratisation of games development," says Helgason. "There's two parts to what we're doing there. Firstly, it offers a very visual tool so users can work with timelines, sequences and so on. But also there's some video tools that we didn't show too much of at Unite. We don't know exactly where it will go, except to say we're doing all we can to offer high-level tools that allow creative professionals and designers to be involved in the development process."

There Helgason must stop, as there are those 1,500 devs to mingle with. Most, it seems, are as much Unity fans as they are users, proudly sporting T-shirts from previous Unites.

But stop any in the corridor, or overhear conversations in the queues to sessions, and one thing is clear. The Director concept, Cloud Build platform and coming GUI system seem to have engendered enough interest to keep Unite busy for many more years ■ **www.unity3D.com/unite.**



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DENTONS

Liverpool **rising**

The local industry may have had some high profile closures in the past, but there are signs of renewed life in this development hub. **Craig Chapple** investigates what's changed and how local companies are gearing up to put the region back on top

LIVERPOOL WAS ONCE a hotbed for creative development talent and home to some of the biggest and most famous studios in the UK.

But changes in the market, a long console generation and the rise of mobile gaming saw some major closures. These included Studio Liverpool, formerly known as Psygnosis and formed 30 years ago in 1984, and *Blur* developer Bizarre Creations, leaving more than a hundred developers jobless.

It is arguably harder now to name more famous studios in the region.

"Liverpool has always been a creative force in games, but its community clustered into a few super studios reliant on publisher models to succeed," says Lucid Games co-founder Peter O'Brien of the city's past.

"When the industry evolved to be hit-driven, these studios failed to keep pace with consumer tastes and despite their quality, the products failed to maintain returns on their investment. Back then, UK development costs were also some of the most expensive in the world and the hit games were being made elsewhere and delivering ROI. Global recession, the end of platform lifecycles and the rise of new platforms, such as social and mobile, were also factors."

> ***"When the industry evolved to be hit-driven, studios failed to keep pace with consumer tastes."***
>
> Peter O'Brien, Lucid Games

Kevin McManus, head of creative and digital at Liverpool Vision – a group that offers business advice to local entrepreneurs – agrees, and remarks that there were many reasons behind the region's troubles. Failures such as *Blur*, for example, are often wrongly cited as the sole explanation for devs closing.

"The reality is much more complex and was down to the disruption occurring in the industry at this time, which was undergoing rapid change with the rise of digital downloads and free-to-play games," he says.

"These need different business models, which lend themselves to different types of studios. A changing market sometimes means less profits and large internal studios have very large internal burn-rates.

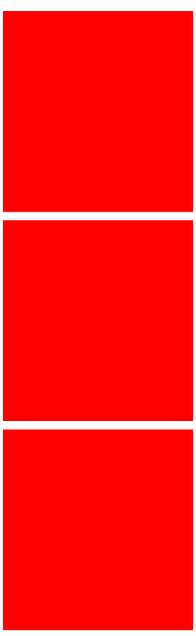
"But there appears to be a resurgence occurring in the city. Those major closures, combined with the experienced developers the region has nurtured, has sparked a number of new, local studios."

Those new companies include Evolution Studios founder Martin Kenwright's new company Starship, *Playroom* developer

REGION FOCUS: LIVERPOOL

Number of game industry employees: 350+
Number of game studios: 35
Notable companies: Sony, Firesprite, Starship, Lucid Games, Ripstone
Notable games: *Blur*, *WipEout 2048*, *The Playroom*
Local population: 470,780

Local industry experts believe the experienced developers in the city are leading a resurgence the regional development hub



Top to bottom: Liverpool Vision's Kevin McManus, Lucid Games' Pete O'Brien and Firesprite's Graeme Ankers

Main: Bizarre Creation's Blur proved a commercial failure despite being well received by critics

> ***"Not only do we have a much greater number of companies in the city, they also cover a wider breadth."***
>
> Clemens Wangerin, Starship

Firesprite, Lucid Games – which is behind the upcoming *Geometry Wars 3: Dimensions* – Milky Tea and Playrise. There's also publishers such as Ripstone and Thumbstar and recruitment experts Amiqus situated nearby.

In total, Liverpool Vision says there are over 35 games companies in the region, employing over 350 people – without including Sony's QA operations that house over 500 staff. The wide breadth of the local sector was on show at industry trade body UKIE's recent games expo alongside the Liverpool International Festival for business in July, which CEO Jo Twist says reveals just what a vibrant development community the city has.

"We had more thean 20 companies from in and around Liverpool exhibiting and many more games businesses attending the workshops we put on with the UKTI," she says. "It's great to see such a vibrant and growing cluster in the region."

But while many of the companies may be young, many of the staff are some of the most experienced in the world, thanks to the city's heritage in games development.

"Things have changed significantly over the last five years and companies like ours are a testament to that," says Clemens Wangerin, COO of one of the area's newest games companies, Starship.

"I left Sony in 2009 and there was only two-to-three developers in the city outside the 'big two', all of which pretty much kept their heads down and kept themselves busy with work-for-hire or publisher-funded projects. Now, not only do we have a much greater number of games companies in the city, they also cover a much wider breadth."

Amiqus business manager Liz Prince adds: "The emergence of local grants and funding from the government has played a big part in helping teams get off the ground and start their journies into growth. In the wake of the closure of prominent studios there's now a lot of positivity and optimism around up-and-coming studios like Firesprite and Starship."

RISING FROM THE ASHES

But will the region ever be as big as it was? Local developers are split in their opinons on where the city is headed, though they all agree it will look vastly different in future than its console-focused past.

Firesprite MD Graeme Ankers, whose new studio houses 22 staff and is working on

various platforms including the PS4, mobile, tablet and VR, believes there is potential for the city to grow bigger than before.

"There is a palpable sense that the region has regrouped, retained and redistributed its vast, leading class talent," he says. "It's only a matter of time before the fruits of that passion and labour begin to make an impact like they did in years past."

Jonathan Holmes, CEO of studio Milky Tea, a team of nine working on racing game *Coffin Dodgers*, is confident the region will grow larger than it used to be, but says the city will no longer be home to the big 200-person triple-A studios – a change perhaps not confined to Liverpool but the wider industry.

> ***"One aspect that Liverpool and the Baltic Triangle does well is everyone's willing to help each other."***
>
> Jonathan Holmes, Milky Tea

"Instead you will see smaller agile ones working a mixture of projects and IP," says Holmes. "I think the whole industry has changed dramatically and think there is far more competition out there.

"Nowadays a two-man studio can have a tremendous amount of success so games studios need to think more like start-up businesses and less about how things used to be. Things like marketing your game, business strategies and monetisation, which isn't second nature to most games development studios, is so important now.

"I think the one aspect that Liverpool and the Baltic Triangle does well in particular is that everyone's willing to help each other and share experiences."

Ripstone creative director and co-founder Phil Gaskell describes the current scene in Liverpool as the "perfect storm", with a growing collective of new and experienced games development teams, publishing labels to find the right audiences and support them, numerous creative service providers to assist with game creation, and the all-important funding groups that are able to inject capital into new and exciting projects.

"This has really only come about in the last four or five years with the introduction of digital distribution, and the more widespread adoption of middleware over in-house tech. The focus is now much more on the creativity and design of games, and Liverpool developers have shown time and again they can deliver on that."

O'Brien adds: "It certainly feels like it has its heartbeat back. Very few large independent studios exist in the UK, let alone Liverpool, mostly due to past development costs and partly to do with strategic consolidation by super studios like EA and Activision.

"However, we are experiencing a re-investment from such studios and its our responsibility as small independent developers to make better deals, build lasting relationships and simply make great games players want to invest in. I'm hoping that if the community maintains our independence and continues to have small wins, we will have a community that outlasts any technological or market trend."

YOU'LL NEVER WALK ALONE

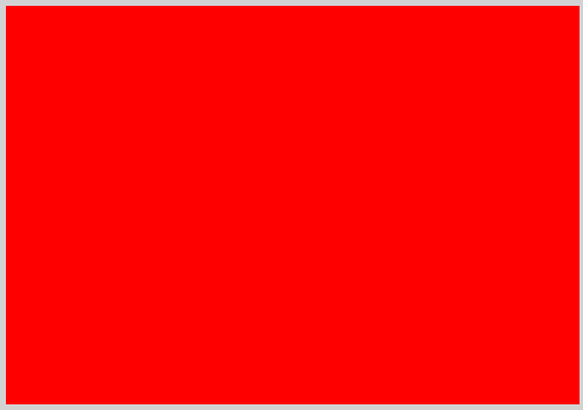
That sense of collaboration and history is something that is part of the fabric of this new Liverpool development hub, with most, if not all, studios willing to share resource and advice on projects to ensure success for all.

Wangerin says though it's still a young studio, Starship has already worked with others on projects, and highlights the Baltic Triangle area – the emerging home of the creative industries in Liverpool city centre – as a place where the sense of community is particularly high.

"It almost feels like a campus at times," he says. "You're always bumping into someone you know and you often see clusters of people having a chat while they're out. The great thing about this district is that it's all been grassroots-driven and there's not only game and tech companies, but we share the area with live event venues, restaurants, cafes, auto repair shops, a car wash, shops that sell kitchen doors and garden sheds, a bakery, a micro-brewery and more."

O'Brien, whose studio Lucid Games is home to 34 staff and was formed from the ashes of Bizarre, says without the large studios of the past, devs are now able to discuss their products and share ideas, something that was difficult when bound to secrecy under studio contracts.

A LAUNCH PAD FOR STARSHIP



STARSHIP IS THE new company formed by Evolution Studios founder Martin Kenwright, following a seven-year hiatus from the industry. The new studio currently houses 30 staff, but is still recruiting for new faces.

Despite a relatively small number of employees to some games firms, the new studio is already at work on several titles in the e-health, lifestyle and education sectors. Titles include children's adventure series *PlayWorld*, interactive cookery platform *CyberCook* and memory tool *Forget-Me-Not*.

Kenwright recently told *Develop*: "The games market is still a very crowded sector, and you've got to look at things from slightly different perspectives now, in terms of from a commercial perspective instead of just fighting in the same backyard with the same people and fighting over the same space. What would happen if we used gamification and moved into sectors that have never really seen really cool uber 3D before, and high-end visuals?"

Starship COO Clemens Wangerin says Liverpool is an ideal place to set up business, despite a traumatic past for some due to its high profile closures.

"Here in Liverpool we were fortunate that so many of the experienced and seasoned developers took it upon themselves to stay here to strike out on their own and start their own businesses," he says.

"I think managing to hold on to that level of knowledge and expertise was of paramount importance and is what gives the city a real advantage."

New and emerging studios in Liverpool include Firesprite, which worked on PlayStation launch title The Playroom (above left)

HUB FOR TALENT

AMIQUS IS A multi-Develop Award-winning recruiter that specialises in hiring for the bustling games sector, making placements across the world, and has its operations based near Liverpool in Warrington.

The agency's business manager Liz Prince says the talent pool in and around the city currently looks very promising, and is home to a mixture of experienced and aspiring developers looking to make their mark on the industry.

"There are growing teams of small indies looking for funding and building their own IPs and this is one of the positive effects of the large number of games-related courses available at local universities," she explains.

"This can only be good for the industry. No-one knew what impact the closure of SCE Liverpool would have, but it seems to have helped fuel a new generation of indies that have risen like a phoenix from the flames. A growing number of smaller developers and publishers now form the backbone of a 30-strong games industry community based in the city centre around Fleet Street and the Vanilla Factory.

"There is a mixture of experienced developers and rising stars so it's certainly a good time for investors to be looking at building and growing local teams. A recent UKIE event in the city centre proved that the community was on the up with over 200 local attendees."

Top to bottom: Playrise CEO Nick Burcombe and Clemens Wangerin, COO of new studio Starship

"I believe this will facilitate better games and apps for those who recognise the value of collaboration, even if it's a casual chat over some drink and food or on Twitter," he says.

"Our studio has a history of working with local partners, from experienced freelance games developers to service-orientated businesses. When working with partners at any level, we see them as part of the team."

The sense of collaboration isn't the only benefit of working in the Liverpool games and tech hub. The cost of living is relatively low in Liverpool, particularly when compared to cities in the South such as London, where costs are increasingly rising.

There have also been some significant investments into the tech hub in recent times, as well as the formation of the International Festival for Business – an event that debuted this year to encourage trade and investment in the region.

And it's all this, O'Brien says, that is continuing to reinforce that aforementioned important culture of creativity and collaboration in the city.

> ***"The squeezed middle has all but vanished: too big to be small, and too small to be big."***
>
> Phil Gaskell, Ripstone

"Liverpool is still a vibrant, creative city that endures and is currently revelling in its resurgence," he says.

"The city has just hosted the first ever International Festival for Business and benefits from British-USA trade worth billions of pounds. There are ongoing investments for students, universities and urban planning, which means opportunities for local business and communities. We have a competitive living cost, and a creative culture that is not only recognised, but receiving heavy investment and producing creative hubs like the Baltic Triangle, an area with world-class food, music and creative business achieving comparisons with New York districts."

THE NEW FACE OF LIVERPOOL

The city's heritage ensures it's easier than ever for new studios to set up in the area, though as with all studios and technology hubs, there are still challenges companies in the region must face.

Gaskell says the creative culture of Liverpool and close collaboration between studios helps, but there are still issues however, most reflective of Liverpool's recent past and current state.

"It's clear there's a pretty big gulf that's opened in terms of team sizes," says Gaskell.

"You're either a micro studio making brave digital games that embrace risk, or you're part of a super-team building billion-dollar franchises. The squeezed middle has all but vanished: too big to be small, and too small to be big."

And no matter what size your studio, Playrise CEO Nick Burcombe says access to finance is a challenge for studios in the region, amongst others, but says keeping costs down can help alleviate these potential problems.

"You keep overheads low if you're sensible about it," he says. "We share an office in the Elevator studios, opposite the old Cains brewery, not only to keep our costs down, but to be part of the amazing community of creative activity in the Baltic Triangle.

"But there are challenges; too many to list. But the primary one is access to finance. There are schemes out there to help, but understanding what financing options you have take up a lot of time."

Another challenge facing developers in the region is recruiting well-educated graduates and aspiring developers, particularly in areas such as programming.

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Lucid Games was formed from the ashes of Bizarre Creations, and has worked on titles such as Jacob Jones and the Bigfoot (right)

There has long been a debate over how well students are trained in core programming skills, and the ideal courses they should study. The rise of easily accessible middleware such as Unity has also led to some aspiring developers relying perhaps too heavily on third-party tools, rather than learning to dig into the code themselves and using such technology and tools to add to that expertise.

Ankers believes accessible middleware and universities taking a more cross-discipline approach in recent times has been encouraging, and says he has seen a great improvement in the calibre of graduates in as young developers are keen to get straight into games creation.

He warns, however, there are now less graphics programmers or low-level coders – those who are able to squeeze out the very last per cent of a system to make that "special difference" to a game, and believes this may be a symptom of the 'middleware culture' many devs have become accustomed to.

> ***"Engaging with young people and demystifying development before they decide what to do is key."***
>
> Clemens Wangerin, Starship

PROGRAMMERS IN DEMAND

Playrise CEO Nick Burcombe says the UK needs to encourage more children to get in to programming at school and at home, much like they did during the 1980s thanks to programmable computers such as the Sinclair Spectrum and BBC Micro.

"The current generation of developers were absorbed in that thrill of making a computer do what you wanted it to do at a young age, but since those days, schools have moved away from the computer sciences and now have classes like ICT," says Burcombe.

"In doing so, they have taught millions of children to use software, but not make better software. Getting kids into programming is what is needed if we want to have a long-term world-class games development culture in this country.

"We as a nation – Liverpool in particular – have lost so many skilled jobs that produced exportable products throughout the '70s and '80s, and this is something we were really good at, but are now falling behind."

Amiqus' Liz Prince echoes Burcombe's sentiments, and believes industry-wide demand for programmers is not being met, but praises local educational institutions for their efforts.

"The University of Liverpool, Liverpool John Moores University and Liverpool Hope University all offer Computer Studies courses that include programming and this is a great start," she says.

"Our experience is that Liverpool is reflective of the whole industry's over-representation of aspiring video games designers compared to an under-representation of the more mathematical based programming grads."

As well as its range of universities, Liverpool is also home to The Studio, a school for 14 to 19-year-olds that teaches young people key skills to get into the games industry.

A NEW ERA

Developers in the local area have praised the school and sixth form college for its work, as it specialises in preparing people for the digital world. Students entering sixth form can choose from three pathways: coding, creative and entrepreneurship, in which they'll work in project teams which the institution claims will "ensure that they have a broad base of knowledge and experiences".

"I think we're all very proud of what The Studio has managed to achieve in a very short space of time," says Wangerin.

"They've really got the bit between their teeth and it's been amazing to see the type of ideas and apps that the young people are coming up with. A big part of their success so far, apart from having the teaching staff who've really thrown themselves into this endeavour, has been how close the local games and tech sector got involved. Industry people are giving guest lectures there, act as mentors, give master classes in a particular field or get involved as Governor's.

"I think if anything that's a great blueprint and personally I think engaging with young people and demystifying games development before they decide on what to do at University or in their careers, is absolutely key to give the next generation of games developers the best possible start."

With clear efforts being made to develop aspiring game-makers in the city to ensure these young development studios have a well-educated and vibrant talent pool, it looks as though the resurgence in this dev hub is well underway.

The setting is different to its super studio, console-focused past. Companies are generally much smaller, nimbler and aware of the different games markets and constant industry fluctuations.

But with such a wide array of developers making games for numerous different platforms, many of which are only a few years old, Liverpool could one day again house new super studios of its own, run by those who have learnt the lessons of a harsh past and are prepared for a new future. ■

VISION FOR INVESTMENT

AS MORE SMALLER studios set up in Liverpool, the need for supportive funding and investment opportunities has increased to ensure these new businesses can continue to operate and become successful.

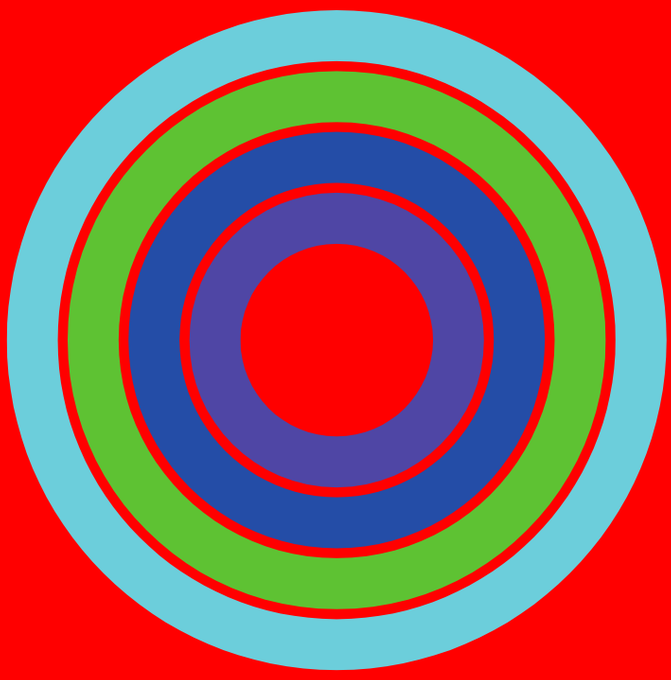
One organisation helping facilitate investment in the local industry is Liverpool Vision, a group that offers advice to local entrepreneurs on where to find the right funding and support, whatever the size of their company.

Head of creative and digital at Liverpool Vision Kevin McManus says there has been a noticeable increase in investment in the city in recent times.

"Definitely, and the fact that Standfast has opened a Liverpool office for its games investment is another factor indicating the strength and real potential of the sector here," he states.

"A number of the games companies here have received investment from the likes of Standfast, the North West Fund or a variety of other investors."

McManus adds that games tax relief is also having an effect on the local industry, but believes there is scope to improve this further through knowledge sharing in the community to ensure developers know what is required to pass the cultural test.



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New Develop sales exec, and Martin Hutchings joins Engine Room
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RECRUITER HOT SEAT:
Axis Animation's Jill Wallace on how to land a job at the studio
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GET THAT JOB:
Engine Room Games' Sam Bickley on becoming a QA test assistant
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Industry involvement can improve education

Sega Hardlight's Lee Winder and Tom Gaulton discuss the challenges facing a new generation of programmers, and the skills they expect from job applicants

by Craig Chapple

THE DEBATE OVER whether universities are equipping aspiring developers and programmers with the right skills isn't a new one, but it hasn't gone away either.

The situation has arguably improved, but more can still be done to ensure students learn as much as possible at university, while also gaining the experience required to put theory into practice.

Speaking to *Develop*, Sega Hardlight technical team lead Lee Winder (*above left*) says there isn't a simple yes or no answer to whether schools are teaching students the right skills. Some provide excellent courses, while others aren't quite up to the same standard.

He says that the wide diversity of technology used in the industry makes it difficult to teach students everything they need to know, but believes universities can still teach the core skills.

"As for what can be done to improve this, it's a case of the industry engaging with education, offering their support on course content, offering to speak to students or provide seminars," he says.

"You also have organisations like Creative Skillset who work with universities providing support and accreditation for creative industries."

Winder and his colleague, principal engineer Tom Gaulton (*above right*), both have an education in computer science at degree level, qualifications and knowledge which have undoubtedly helped them throughout their careers and land them leading jobs at Sega Hardlight, a division of Sega Networks.

> ***"The industry must engage with education and offer support."***
> Lee Winder, Sega Hardlight

"I studied Computing A-Level, then moved on to a Computer Science degree at the University of Birmingham. I picked that course because it focused on C++, which was unusual at the time," says Gaulton.

The team used the Unity engine for its latest release, free-to-play mobile title *Crazy Taxi: City Rush*. Winder says it is a fantastic tool that has "clearly been of benefit to the industry", thanks to its pricing model making it accessible to indies the world over.

But he admits that an over-reliance on such tools can become harmful to a programmer's development.

"There is a significant advantage to fast iteration, but when memory is at a premium or when frame rate is stuttering and you need to optimise the title, not having experience of things like memory allocation strategies, native language profiling and other low level concepts will be a hindrance," says Winder.

"At Hardlight we require our applicants to be proficient in C++ even though most of our titles are developed with C# via Unity, simply because the skills you learn when programming in C++ will benefit you immeasurably when working on other C-style languages, though that can't be said the other way around." ■

MOVERS AND SHAKERS

This month: Intent Media, Engine Room Games, Strawdog and CCP

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NEW SALES EXEC FOR DEVELOP

INTENT MEDIA ■ **CHARLOTTE NANGLE** has joined *Develop* as a sales exec.

She joins from First Radio Sales having held the position of project manager. Prior to that role, Nangle worked as a client operations manager at Cover Point Data, and before that was an assistant manager at Gamestation.

Shes comes to *Develop* following the promotion of the publication's sales manager **ALEX BOUCHER** to the role of group sales manager for Intent Media's games titles. In this role he will oversee sales on both *Develop* and *MCV*.

"Charlotte is a great addition to the *Develop* team – having a personal interest in games and the sales experience from working in games retail, Charlotte will deliver a professional and knowledgeable approach to everyone who deals with her," said Boucher.

If you wish to get in touch for sales opportunities, email **Charlotte.Nangle@intentmedia.co.uk**.

ENGINE ROOM GAMES ■ **MARTIN HUTCHINGS** has joined Engine Room Games.

The developer comes to the studio with 19 years of experience, having worked for the likes of Rebellion, Pivotal Games and Codemasters. His role at Engine Room will be senior software engineer.

"ERG have been hiring only the very best of the best games development people in the five years that ERG have been established, and we're delighted to have Martin join us," said Alex McLean director at ERG. "I have worked with Martin previously at both Pivotal and Codemasters and look forward to him making a continued invaluable contribution."

STRAWDOG STUDIOS ■ The Derby-based developer has hired two new programmers. Graduates of University of Derby's Computer Games Programming course **MATT HANDY** and **CHRIS FISHER** have joined the studio.

"We're very pleased to welcome Chris and Matt, and the fact that they have quickly integrated into the studio is testament to the skills they acquired during their degree course," said the studio's MD Paul Smith. "Strawdog has an exciting slate of projects scheduled for release and the team is strengthened by having these guys on board."

CCP ■ The Iceland-based publisher has announced *Eve Online* senior producer **ANDIE NORDGREN** has been promoted to the role of executive producer for the space MMO title.

Nordgren joined CCP in 2010 as technical producer for the Core Technology Group, working on server technology that made it possible to connect *Eve* and *Dust 514*.

"It gives me great joy that Andie has accepted this challenge," said Hilmar Veigar Petursson, CEO of CCP. "Over the years I have watched her go from strength-to-strength at CCP and believe her deep understanding of how communities thrive and grow will benefit *Eve* even more in this new role.

"As senior producer, Andie developed and communicated a tremendously inspiring path forward for *Eve* which, now that she's at the helm, we are confident will deliver *Eve Online* to new and exciting places in its second decade."

Nordgren added: "As the executive producer, I will continue to invest in the power of our amazing player community, and in making *Eve Online* the world's most ambitious science fiction universe."

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This LA-based Sony first-party studio has its awards on display, as well as goodies such as t-shirts and busts from its long line of PlayStation-exclusive games.

RECRUITER HOT SEAT

Axis Animation's studio manager **Jill Wallace** on how to land a job at the Glasgow-based firm

What differentiates your studio from other companies ?
Axis is unique in a variety of ways, from the diverse scope and style of work we do to the completely collaborative approach we offer clients. First and foremost though, Axis continually strives to increase the quality and creativity of our work from project to project. Our staff pride themselves in always looking to achieve better results, be it in creating more realistic characters or bigger, more complex effects.

Our teams don't just want to get the job done, they want do it and make it look awesome – that in itself is a very rewarding atmosphere to work in, which is why we have a low permanent staff turnover and such a large pool of returning freelancers who come work with us from all over the world.

How many staff are you currently looking to take on?
Due to the turnaround time on projects and the number of projects we are able to run concurrently in the studio, we are constantly hiring for contract roles, across all disciplines. This ranges from concept artists to animators, to pipeline TDs and lighters. Most of these are short-term project-to-project roles. However, we do offer longer contract opportunities to outstanding individuals who prove themselves to be invaluable members of our team.

We are currently recruiting for full-time roles too – specifically for producers, pipeline supervisors and Unreal experienced technical artists.

What should aspiring new recruits do with their CV to get an interview?
We get a lot of applications, via the recruitment form on our website. If you're looking to apply more generally then you can do so by sending your CV, cover letter and portfolio/showreel link and breakdown if applicable to **recruitment@axisanimation.com**.

At this point, applications are filtered out by myself, to the relevant department heads and supervisors for review and shortlisting.

It is worth noting that speculative applications are very welcome. Even if we don't have a vacancy at the time you apply, if you're shortlisted, you'll be added to our 'to hire' list and we'll be in touch as soon as a suitable spot arises for you.

When you apply, remember to make sure your contact details are included, and importantly, they're correct – no typos.

BIO
Name: Jill Wallace
Title: Studio Manager
Developer: Axis Animation
Country: UK
www.axisanimation.com

> ***"The best way to impress us is by having an awesome portfolio."***
>
> Jill Wallace, Axis Animation

Who is the best interviewee you have ever had?
All interviews are pretty unique, from the shyest person with an outstanding reel and portfolio to the new graduate who is just brimming with excitement about even getting an interview. It is worth noting that we conduct a lot of telephone and Skype interviews as a lot of team members are from Europe and beyond so often we don't meet in person until they're hired and actually arriving at the studio. The best way to impress us is by having an awesome portfolio, a confident can do attitude and showing that you're passionate and love doing what you do.

And who was the worst?
The worst interviews have to be the ones where people are so nervous that they struggle to converse, and it is just really awkward for everyone involved. The opposite of this is where individuals are overly confident and instead come across as cocky and arrogant. It can be pretty tricky striking a good balance in an interview situation, but there are lots of online resources available on interviewing tips if you struggle in these kinds of situations.

What advice would you give for a successful interview at Axis?
One key thing is to have researched the company that you're applying for and have been successful in getting an interview for – you will always get extra points for being able to chat about the work we do and it shows you have taken the time to go find out about our studio and our portfolio. Take notes during the interview which you can use as prompts for questions to ask at the end, when the usual 'Do you have any questions for us?' is asked – a lot of people don't ask questions so you'll stand out if you do.

If Axis has recruited internationally, what was the process like?
We hire from all over the world. If you're an EU citizen with an EU passport there are no restrictions on working with us and our multi-national studio team is testimony to that.

Further afield we have on occasion sponsored outstanding individuals. But this is a lengthy process with no guarantee of success so it is not something we're able to do very often. This shouldn't dissuade non-EU citizens from applying though – ancestry visas are another option if you qualify – we have a few individuals in our team at the moment who were hired via this route.

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GET THAT JOB

Development specialists offer advice on how you can bag that career leap

THIS MONTH: QA TEST ENGINEER

ENGINE ROOM GAMES' Sam Bickley discusses the skills needed to be a QA test engineer.

What is your job role?
I'm currently a QA test engineer, working at Engine Room Games on the implementation of all PlayStation platforms for Unity. I provide triage on the many enquiries we receive from developers, but also do a lot of work testing both existing and new features of the game engine for the platforms.

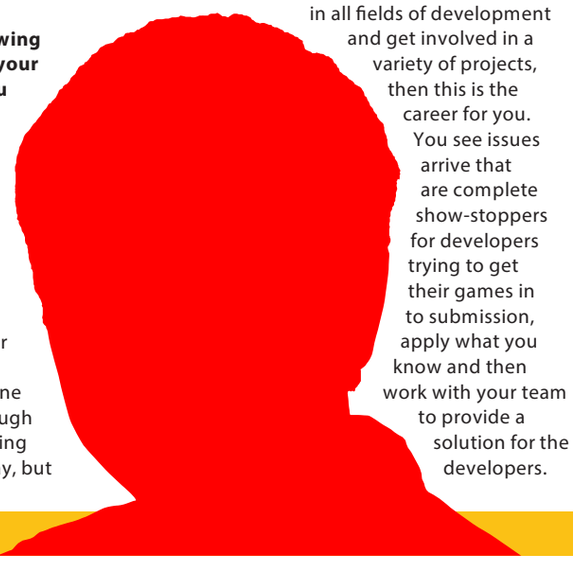
How would someone come to be in your role?
Keeping an open mind to what career roles you want to go in to and knowing the right people has got me to where I am today. I originally completed a BA degree in Games Design at Staffordshire University and began working as a junior animator, but over time found myself migrating to a position as a technical artist. Things have only continued to become more technical and varied as time has gone on, which has really helped me in my current position.

> ***"This role is for you if you want to expand your development knowledge."***
>
> Sam Bickley, Engine Room

What qualifications and/or experience do you need?
Because of the sheer variety of work this role entails, having experience in a number of fields is really helpful. Most university courses provide a broad enough selection of modules so that you won't be blind to any one area, and having a mixture of technical and artistic knowledge is very beneficial. Ideally you'll have done some work in QA before, and be familiar with the processes involved. However, anything is possible if can show you're a quick and willing learner.

If you're interviewing someone to join your team what do you look for?
They've got to be the right person for the team: you've got to be able to properly communicate and get along with everyone you're working with. After that, I'd really be looking for someone who's flexible enough to deal with anything that comes our way, but also genuinely enthusiastic about the work they'd be doing.

Why choose to follow a career in your field?
If you want to expand your knowledge in all fields of development and get involved in a variety of projects, then this is the career for you. You see issues arrive that are complete show-stoppers for developers trying to get their games in to submission, apply what you know and then work with your team to provide a solution for the developers.

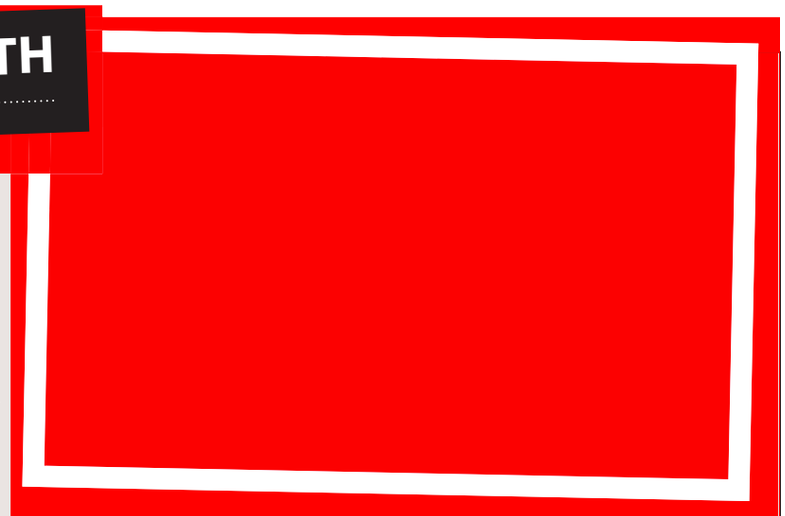


If you've got job advice to share, email **Alex.Calvin@intentmedia.co.uk**

Diaries from **ALACRITY FALMOUTH**
Innovations in Incubation

Blending industry and academia

In the first in a series of diaries from Falmouth University, technical manager **Rob Perren** reveals how he's giving students an early taste of life in the games industry



"THE TIMES THEY are a-changin'," said Bob Dylan of the 1960s. And in 2014, the games industry is going through big and exciting changes.

Small creative teams are pushing what the medium can offer and delivering software over an ever-expanding array of platforms. My life has also been changing: earlier this year I left my job at a top developer to try something different. Little did I realise that the industry had beaten me out here.

As you may have read in *Develop*, Falmouth University has been investing heavily in its Alacrity Falmouth Programme, part-funded by the ERDF. The idea is to take 20 graduates and put them into a 'hothouse' environment to work on market-led projects in the digital games industry.

These projects are a mix of indie games on PS4 and the use of gamification for other sectors such as telehealth and the space industry. They are supported by industry experts to ensure that not only do they make exciting and innovative software now, but that they can continue to innovate within their own companies for years to come.

So where do I come in? After eight years with EA and Criterion, my role is to distill my industry experience down and offer it to the teams to support the technical development of their projects. In practice, this

> ***"Students are supported by industry experts so that they can innovate."***

is a combination of providing the infrastructure that goes hand-in-hand with high quality development – source control, project management tools and so on.

While the former of these is common among any number of jobs across the development industry the latter is where I am experiencing the biggest change. Recently, I've been helping the teams prototype ambitious new AI systems and combat mechanics. Next week promises to be even more interesting, as some of the other teams start looking at new advances in mo-cap technology.

It has been really exciting so far to see the teams' talent and enthusiasm infuse into their projects and, as they get more and more familiar with the technology and platforms they have at their disposal, I can see lots of big and exciting changes to come as the Alacrity Falmouth Programme quickly grows a globally facing digital games industry in Cornwall.

You can find out more at falmouth.ac.uk/alacrity-falmouth

SKILLS AND TRAINING

This month: Teesside University

Teesside University
Vicarage Road
Darlington
DL1 1JW

T: 0330 123 9235
E: scm-enquiries@tees.ac.uk
W: www.tees.ac.uk

TEESSIDE UNIVERSITY HAS been teaching numerous courses in games development for years. Prospective students can apply for degrees in computer games art, design, animation and programming, as well as the newly introduced indie games development course.

Pupils on the programming degree are given the opportunity to code games each year, getting to grips with the major game engines such as Unreal, CryEngine and Unity.

One of the first-year modules brings students together from all the various disciplines taught at degree level, and over 14 weeks they work together to produce a vertical slice game prototype.

"The module attempts to mimic the way industry works as closely as possible within the context of a university module," says Teesside school of computing assistant dean Alison Johnson.

"The students present their levels towards the end of the module to our industry partners and gain valuable feedback and advice on their work."

During the following years, students are able to undertake placements at companies such as Rare, Ubisoft and Sony, with many studios including Eutechnyx, Atomhawk and Reflections sponsoring awards on specific programmes for the graduate showcase ExpoTees, and playing an active role in critiquing work.

Johnson says the university distinguishes itself from others by offering structured courses to enable aspiring artists, designers, programmers and animators to develop their own skills to industry-level standards, as well as teaching them to work in multi-discipline teams.

Teesside University school of computing assistant dean Alison Johnson says the establishment offers a variety of courses for designers and programmers

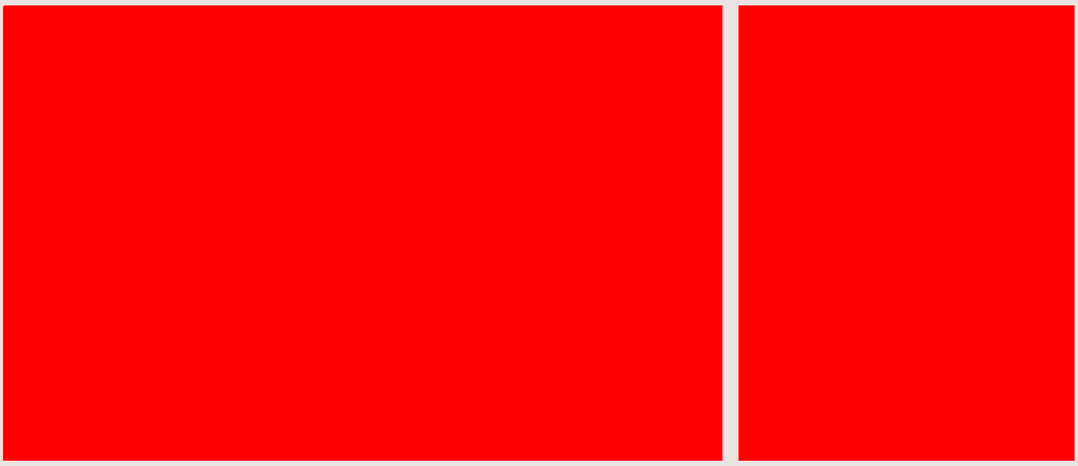
The university also houses a wealth of experienced teachers with industry experience, has Skillset accredited courses and plays a leading role in running the international festival of animation and computer games, Animex.

"This is held on an annual basis and offers a unique mix of talks, master classes, workshops, film screenings, exhibitions and promotes an ethos of collaboration and sharing, bringing the world of computer games and animation to the audience at any level of expertise," says Johnson.

It is often debated whether student developers should study courses such as computer science or more games-related courses. Johnson argues that while computer science is a great programme, aspiring developers who want to work in the games industry can benefit from learning about the sector in a dedicated games context.

"Moreover, students get to work alongside those studying games art, games design and games animation in team-based situations," she explains.

"The placement opportunities are also tailored exclusively for the games industry. Also, few computer science courses would enable a student to study the graphics, physics, animation and AI techniques commonly used with computer games that we do. In addition, not many computer science courses have significant coverage of C and C++ programming, which remains the popular choice of programming language within the industry."



In addition to covering graphics, physics and animation, Teesside University's game development courses also cover C and C++ programming

INFO

Courses: BA (Hons) Computer Games Art, BA (Hons) Computer Games Design, BA (Hons) Computer Games Animation, BA (Hons) Indie Games Development, BSc (Hons) Computer Games Programming
Established: 1930
Country: UK
Staff: **Paul Docherty** (Principal Lecturer in Games), **Deepak Gautam** (Senior Lecturer in Games Level Design), **Alex Groves** (Principal Lecturer and Section Head), **Darren Abbot** (Senior Lecturer in 3D Games Art), **Keith Ditchburn** (Principal Lecturer in Games Programming)
Notable alumni: Shaun Spalding (indie developer), **Matthew Oakley** (Reflections)

BUILD

THE LATEST TOOLS NEWS, TECH UPDATES & TUTORIALS

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Plotting the future of the leading physics middleware
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HOW ELIZABETH INSPIRED MUSIC
Garry Schyman discusses his score for BioShock Infinite
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Harnessing the Cloud

Most people think cloud gaming simply means streaming services and offloading calculations like AI and physics. But leading experts tell **James Batchelor** there's a lot more potential in the technology than current titles might suggest

DEVELOPERS ALREADY KNOW about the most prominent examples and uses of cloud computing in games. From streaming services like OnLive and the upcoming PlayStation Now to the use of offloaded AI in *Titanfall* and *Forza 5*, it's already clear that the technology opens up new possibilities for games.

But this is just an overview, according to Microsoft's CTO of cloud services Rob Fraser, who doesn't think the development community fully understands the potential and specific practical uses of cloud computing in the games they make.

"First off, the cloud is still misunderstood, probably because of the way in which the tech industry initially positioned the concept," he tells *Develop*. "The traditional view is one of a stack – infrastructure-as-a-service, software-as-a-service – and some basic characteristics like elasticity from pooled/shared resources, accessed over the internet and paid for by usage. Some companies think the primary audience for cloud is IT looking to reduce costs.

"But if we look at gaming specifically, we believe that there are narrow and broad views of what 'cloud gaming' means. The narrow view was established by companies like Gaikai and OnLive, focusing on the video-streamed games on-demand scenario.

"The irony is that this 'cloud gaming v1' doesn't have much of what we'd call 'cloud' behind it. It's still a compelling proposition but the issue is that by restricting 'cloud gaming' to the narrow game streaming scenario, we are missing the broader applicability of cloud to gaming. We need to think beyond 'cloud gaming' and look at the cloud and gaming."

Main: Titanfall's AI is an example of the different ways cloud computing can be used in console games, but Microsoft's Rob Fraser urges devs to push this idea even further

CLOUD VISIONS

The broader view that Fraser alludes to can be summed up as two key concepts: using the cloud as a platform to power games-as-a-

service titles, and using it to enable larger and more enhanced game experiences.

These two premises lend themselves to a myriad of new technical solutions. Perhaps the most obvious is the ability to store save data and sync across multiple devices. Many mobile and Facebook titles already do this in a general way, keeping track of a player's overall progress through the game, but there's still room for more ambitious applications of this technique in games.

UK start-up Gateway Interactive, for example, has built the Nomad cloud service, which enables players of its mobile racer *Spectra* to pause mid-session and pick up from the exact same point on a different device.

Cloud computing also offers new possibilities for both synchronous and asynchronous gameplay. In the case of the former, multiple screens and apps can be used to display maps and tactical displays while the main action takes place on the primary screen.

Fraser says, for asynchronous gameplay, devs can create different gameplay scenarios that interact with the main PC or console game. This is perhaps best demonstrated by companion apps for titles like *Watch Dogs* and *Tom Clancy's The Division*, where tablet players can help or hinder console gamers through a completely different userbase.

One of the most promising and ambitious uses of the cloud is utilising its increased computing power to generate larger, richer game worlds. By offloading the calculations required for systems like weather, AI, physics and more, studios can attempt things that regular consoles, PCs or smart devices couldn't dream of.

This has been touched upon by Xbox One titles *Titanfall* and *Forza 5*, which use cloud computing to simulate more sophisticated, realistic AI characters. Fraser believes this could eventually evolve from artificial intelligence to artificial life: NPCs that are capable of self-organisation and complex, emergent behaviours.

But, he warns, such techniques will only achieve their potential if developers push the boundaries of how this can be used: "It would be an easy trap to fall into – assuming that cloud's benefit to gaming is just around the offload of AI and physics. That's another kind of narrow view of cloud gaming: if v1 of cloud gaming was streaming, the v2 mustn't be pigeonholed as 'offload to the cloud'.

"The real benefit to gamers will be the enablement of creativity that cloud gives studios. It will allow creative game designers to define new experiences. That may be richer world modelling, better physics, complex AI and 'real worlds', it could be something entirely different. That's the exciting part – it's a blank canvas."

John Bruno, principle lead program manager for Xbox Live, says that many devs are already embracing this line of thinking.

"Studios are eager to see what they can do to enhance their games using this tech," he says. "We've seen a variety of cloud-driven game enhancements across our portfolio, with the best known examples being things like dedicated servers and cloud-driven AI and physics. As we continue to expand and add datacenters across the globe, we improve player connectivity to game servers. Obviously, the better latency gets, the more that can be offloaded to the cloud, which gives the developer more options."

THE SKY'S THE LIMIT

Cloud computing may sound like the sort of technology that's only accessible to platform holders such as Microsoft and other electronics giants, but Lift London software director Mark Stanley vehemently disputes this.

"A common misconception is that developing for the cloud is hard," he says. "The best thing to do is get out there and talk to other cloud developers. It's not as hard as you think and today's tools are moving forward at

Top to bottom: Mediatonic's Adam Fletcher, Xbox Live's John Bruno, Lift London's Mark Stanley, Microsoft's Rob Fraser

a very fast pace. A key thing to be aware of is that using cloud is like using electricity, so bear compute cost in mind."

Mediatonic's server-side engineering director Adam Fletcher agrees, adding: "For smaller indies or developers looking to get started with the cloud, there's a huge range of software-as-a-service providers allowing cloud-enabled services such as analytics, cross-device syncing and social features to be added with very little overhead.

"Cloud doesn't necessarily mean always-online, or players being locked out of the game if servers go down – it can be used to benefit all genres of games."

Microsoft plans to continue investing in the cloud, not only in how its own studios use it but also in educating other developers how the technology can unlock new possibilities for their games. The Xbox One will be a major player in this, but even Microsoft's Windows and Windows Phone platforms will give studios the chance to experiment with how cloud computing can enable them to make larger and richer games.

As more companies discover the benefits of the cloud – and the various ways in which it can be harnessed – Xbox's Bruno believes we'll see many more video games utilising its power.

"As the platform and Xbox Live evolves, and the game creators find new ways to exploit its capabilities, I expect to see a shift toward more cloud-centric games and a more expanded use of computing resources in the cloud," he says.

"Most developers I speak with see the value of cloud computing – and the benefits they get from easy access to server resources. We live in a world where developers can sign up online and immediately start using as much computing power as they want. Certainly, there should be a practical need and approach to doing so, but the availability of resources today is amazing.

"And the rate at which our computing power in the cloud is growing is exciting – and that all points to an interesting and bright future for developers and gamers who embrace it." ■

> ***"Cloud doesn't necessarily mean always-online. It can be used to benefit all genres of games."***
>
> Adam Fletcher, Mediatonic

DATA IN THE CLOUD

ONE OF THE major areas in which cloud computing can help games developers is the gathering and delivery of analytics that can later be used to influence a title's ongoing development.

Mediatonic's Adam Fletcher says the tech allows the firm "to operate a much greater scale, enabling us to understand how players are interacting with your games on a much deeper level".

"To do this we need to record and store huge volumes of data, and then have access to the computing power needed to be able to analyse it," he continues. "The cloud makes this viable: storage is incredibly cheap and we can spin up clusters temporarily to process the data so we're only paying for what we need."

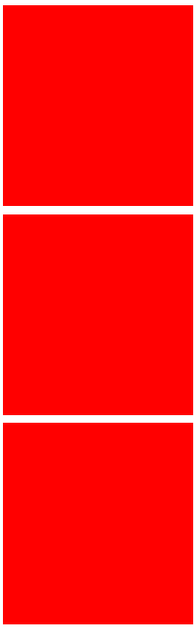
Microsoft's Rob Fraser adds: "Cloud is the natural aggregation and processing platform for game data, and also the locus of control for management, distribution and update of the game itself. The data collected in the cloud, and the analytics that run over it, become a central part of the GaaS model of continual update and iteration, and of on-going customer engagement.

"The analytics can also give insight into the user experience, so in the case of companies like OnLive, the data is used to understand, optimise and make decisions about the deployment and use of cloud computing in providing the service."

As well as enhanced AI in Forza 5 (main), cloud computing can be used to enable synchronous gameplay between players on different devices, as seen in Watch Dogs' companion app (left)

The difference engine

Japanese middleware outfit Silicon Studio has lifted the lid on the first consumer version of its Paradox engine. **Will Freeman** caught up with the team to find out just what they hope the tech will bring to the table



Top to bottom: Lead architects Virgile Bello and Alexandre Mutel, and engineer manager Colin Magne

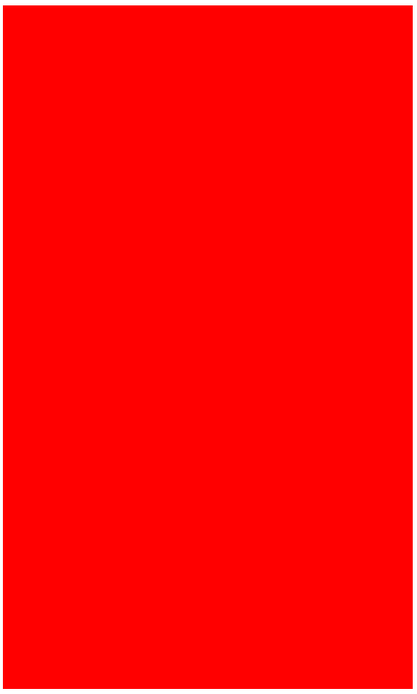
This is Paradox's debut as a commercial game engine. What motivated its creation?
Virgile Bello, lead architect: We started working on Paradox around three and a half years ago, and at that stage it was more of a research project. We were doing it to investigate a lot of things. One of the most important was collaborative editing, as well as shader languages, physical rendering and multi-threaded rendering.

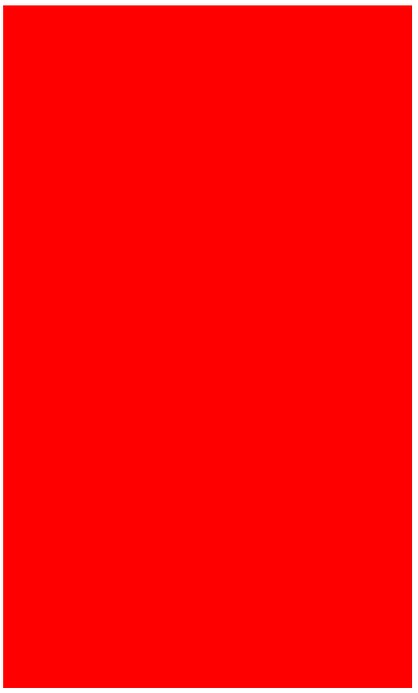
But on top of that, we also wanted to bring our own vision to the engine, with a good mix of ease of use, performance and support for numerous platforms, allowing users to scale from mobile to far beyond. We felt that at the time there were a lot of engines that were accessible, but lacking in features or having a lot of features but without the flexibility and ease of use. We wanted to find that sweet spot, blending the two together.

And at the very early stages, we wanted to target C#, which was kind of new at the time, and do that while giving the developer a better opportunity for productivity.

Does the engine today deliver on those early, research-phase ambitions? Or have you seen it evolve over the years?
Bello: Certainly flexibility and scalability became more important to us, especially after the first six months. We realised we wanted something that was very flexible, and not just a black box that was very hard to control.

> ***"In Paradox, everything is apparent to developers and they can control it the way they want."***
> Colin Magne, Silicon Studio





Alexandre Mutel, lead architect: Over the last year we've been working on making this into a real product, rather than just the research project it was at first. The difference there is we started working on and digging into the new ways there are to use a game engine. We've spent a year making Paradox something that provides a good experience, so we are ready for the public version.

Bello: It has already been used for one commercial project, which is already on the market. That allowed us to test the engine in the real market, and we have grown the team far bigger so we can support our users.

And you've mentioned flexibility. What exactly do you mean?
Bello: We didn't want Paradox to block users at any part of the process of making a game.

Colin Magne, engineer manager: What we mean by flexibility is the access to the customisation of the engine. That customisation is very easy, and the freedom of the programmer there is very high, as is the freedom of the artist.

Flexibility means a user can reach their goal without barriers on the way. It's the black box thing we mentioned. In Paradox everything is apparent to the developer, and they can control it the way they want without being restricted.

So it's integral to Paradox that the engine is open to extension and customisation by the user?
Bello: Yes, and, unlike some engines, you won't need a big team to do that. Paradox targets those wanting a flexible engine that is suitable for customisation by a small team.

Mobile is clearly also very important to Paradox. Why and how do you cater to those platforms?
Mutel: It's important for many reasons, but partly because the mobile industry has been going so strongly in recent years. Mobile

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gaming has been increasingly important to Silicon Studio.

Around two years ago our CEO made a clear statement to the company; that we should go forwards towards more mobile development. So when we started work on Paradox, we were mostly concentrating on high-end features; those that were most common on high-end console and PC.

Then quite quickly we saw what was happening with the mobile market, so we looked at targeting those developers as well, meaning we could offer a competitive product to developers looking to cross-target many platforms.

Paradox has been built with everything that makes it easy to develop in a cross-platform way, and that includes mobile.

Bello: And we have a longer-term vision beyond mobile and console, to target browser maybe. We are considering any platforms developers want to target.

Magne: And early on we were doing a lot of research into high-end graphics. This really built up a strength in the platform, and it was one we could keep when we started to move the engine more towards supporting mobile. Paradox is really strong in terms of its architecture supporting high-end graphics, but it is also optimised for mobile. We believe it is future proofed in that way, as smartphone platforms evolve and offer developers much more power in the future.

Going back to the focus on C# and the support for .NET libraries, why is that of particular relevance to developers in today's games industry? Why does that matter so much?

Bello: It comes down to the fact that we wanted to offer our users power, but in a place where they could be very productive too. C# allows us, and our users, to have very fast iteration times when they are processing ideas and concepts.

It means they can integrate new ideas as they develop, and it will give them much better ideas as C# will allow them to be so productive, giving them more time. It frees up more time for developers to look at bug fixes, memory leaks and so on.

On top of that it brings some nice features, such as asynchronous scripting, which will let a developer work on a second task while waiting for results from another, for example, and in much nicer ways than many other languages allow.

You've also conceived the engine to support collaborative workflows. What does that mean in the case of Paradox, and how is it realised?

Bello: Part of our general vision from the start was to support collaborative development. It's something we will introduce more over further releases; during the research phase we were looking at things like collaborative realtime editing, but that's something that needs more time.

But in the first release we have an asset management system that works well for versioning. It's easy to understand and use, everything there is text-based, so it's easy to read and merge, and all assets are kept as separate files on the hard drive. It should help with all versioning concerns.

The Paradox engine has been developed as part of Silicon Studio's research into high-end graphics, something the firm is determined to bring across to mobile games

> ***"We are open to having people help us make Paradox even better so the engine will be free."***
>
> Alexandre Mutel, Silicon Studio

Magne: Artists, coders and planners using Paradox can work on games without blocking each other. That's the overall impact of our versioning and asset management features.

Bello: And in the future we would like to implement realtime collaborative editing in a scene editor, so that developers can edit together. That is a longer-term goal.

Similarly, the DirectX 11 support must be something you hope will appeal to a broad spectrum of developers?

Magne: The Paradox engine's architecture is basically equivalent to the DirectX 11 feature set, so even though we target mobile, the architecture is DirectX 11. What that means is that in the close future we will see – with new releases coming – things like compute and tessellation added. So Paradox is already ready for that.

So with all these features, are you aiming Paradox at everyone from indies to large-scale teams?

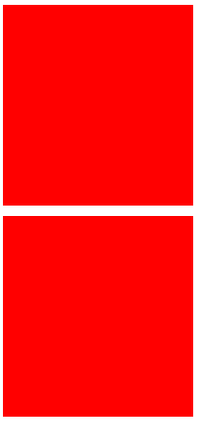
Mutel: We are aiming this more at the indie teams and small-to-medium-sized studios. We are not, for now, targeting triple-A teams, but we will, in the future, try to attract those larger studios. But that is quite far away from today. For now we're offering Paradox for free to small and medium-sized teams. For the first versions the whole engine will be free, even for commercial projects, though that will change over time as we introduce more features.

Further down the line, we will work out offering commercial and open source licenses. The whole engine will be made available as an open source engine, so all will be able to contribute to it, perhaps through something like a GitHub project website. We are very open to having a wide range of people help us make Paradox even better. ■

www.paradox3d.net

Havok's physics renaissance

As the middleware stalwart plots the future development of its newest physics platform, **Will Freeman** ponders parallels with the heady days of Valve's ground-breaking Half-Life 2



Havok's Andrew Bowell (top) and Steve Ewart (above) say the firm's new physics technology can push gameplay in ways not seen since 2003

BACK IN 2003, when Havok released its first physics technology to games developers, the impact was considerable.

Crates and barrels in virtual environments the world over enjoyed a new status as strategic playthings of gamers spoilt by a new way to interact. *Half-Life 2* set a new standard, and in the following years physics-powered ragdolls and gravity guns became staples of contemporary game design. As the years went on, Havok and the in-game physics it championed never went away. Instead, they became standard.

Then, in 2013, Havok's reinvented physics tech found its way to studios. And now, in the second half of 2014, Havok is building a new template for what physics should offer. Already it is able to have thousands of objects interacting in a realtime, interactive scene.

Havok is pushing further still, ever set on bettering the impact on games. It's what Havok's head of product management Andrew Bowell describes as a renaissance not just for physics, but the ideas and potential to impact gameplay, parallel game systems and the creative method of environment artists.

"Describing what we're doing now as a 'renaissance of physics' is not to say physics in games ever went away," he says. "It's been our bread and butter for years. But our latest release of Havok Physics isn't only faster, using less memory and giving higher quality results; we're also returning to a point where it is pushing gameplay in ways not seen before.

"I mean real cinematic gameplay at a new scale. Instead of 100 objects, we are now pushing it to a thousand, or ten thousand, or one hundred thousand objects in game. When they see that, game designers' eyes light up."

As Bowell reminisces about times when stacking ten physically controlled crates used to draw a crowd to a monitor, he and Havok field application engineer Steve Ewart show live, realtime, interactive demos of thousands of boulders tumbling down cliff sides, clattering together and gathering around the structure of a bridge, or soldiers influencing pillars of smoke with a fully automatic gun that unleashes a plume of tinned beans.

CRATE EXPECTATIONS

The demos may at times be aesthetically absurd, but they prove a point. As Havok continues to push physics, vast interactive game worlds unlike anything seen in consumer products before are increasingly possible. And as Ewart guides a sports car through a demo environment, using its wake to gather a sea of autumn leaves into neat piles, he makes an important point.

"A few crates or ragdolls was one thing, and there were great examples, but if a developer could build dynamic systems through their entire environment that work as a complete, grounded system, there is so much to be done with with gameplay," he says. "Imagine a world with smoke effects, intricately destructible buildings, swarms of insects and such, that the player can influence directly, all interacting and controlled physically as a single dynamic system, providing information coming out of the physics that informs AI control and various other systems."

It's immediately obvious on seeing the demos (*pictured*), that a huge leap forward in the number and complexity of physics controlled objects offers devs a rich toybox of ideas to plunder, but it doesn't stop there.

"What we do has to give the developer something they can use; something that informs other systems in powerful new ways," says Bowell.

BUT IS IT ART?

There's even talk of physics to offer artists a creative tool. Why invest hours in crafting distinct derelict buildings when you could just destroy each through physics, generating unique, realistically informed results?

It's an interesting potential offshoot for Havok, and ties in neatly with the broader theme that guides its strides into the future. As it works to offer increasingly complex and numerous physically-controlled, interactive, realtime objects in scene influenced by numerous inputs and feeding out data across a game's own system, the impact of physics in the near future really could be as influential as it was when *Half-Life 2* made the concept part of most ordinary gamer's vocabulary. ■

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David Thomson, *Ludometrics;* **Nicoll Hunt,** *I Fight Bears;* **Graham Dobie,** *Chunk;* **James Parker,** *Ground Shatter;*
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Keep your project on track

Managing teams and projects can be difficult, particularly on large games developed by hundreds of staff. To help **Craig Chapple** has rounded up eight tools to manage the production pipeline and ensure your game stays on schedule

PERFORCE

Company: Perforce
www.perforce.com

PERFORCE IS A version management and collaboration tool used by a plethora of small and large triple-A games development studios across the globe.

A number of products are available to improve the workflow and power continuous delivery, including P4D, which is free for up to 20 users, Perforce Swarm, which provides a social code review and collaboration environment for the team, Perforce Commons, Git Fusion and also Perforce Insights.

HANSOFT

Company: Hansoft
www.hansoft.com

NOW IN ITS eight iteration, Hansoft is an Agile tool for team collaboration and management.

The firm recently brought its first round of funding to $10m, and aims to expand its operations worldwide.

The tool itself offers agile scaling to make the software compatible with "super large" companies, while the latest version delivers actionable agile metrics that allow the entire development team to access and visualise metrics to support informed decision-making.

SHOTGUN

Company: Shotgun Software
www.shotgunsoftware.com

SHOTGUN IS A cloud-based toolset that has become a key part of the development pipeline for many devs.

Recently acquired by Autodesk, Shotgun includes a Pipeline Toolkit that comes with open-source APIs and tools to help build and manage the development pipeline.

The tool works out of the box with middleware such as Maya, 3ds Max and Photoshop, and has been used for games such as *League of Legends*, and *World of Warcraft*. More information is available on page 65.

SOURCETREE

Company: Atlassian
www.sourcetreeapp.com

SOURCETREE IS A free desktop client from Atlassian for Git and Mercurial distributed version control systems.

Available on Mac and Windows, the management tool allows developers both new and experienced to interface with distributed Git source repositories and organise them using a bookmarks window.

Other features also allow users to visualise work changes over time, detect and resolve conflicts and search commit histories for changes and review file logs.

JIRA

Company: Atlassian
www.atlassian.com/software/jira

USED BY THOUSANDS of teams, Jira can be harnessed to capture and organise issues, assign work and follow team activity.

Cloud and server options are available for teams with less than ten users to more than 10,000. Jira 6.3 automatically updates issues when a developer commits code in Stash or Bitbucket, and enhanced reporting in Jira Agile helps identify bottlenecks in the team's workflow as well as gathering more accurate data on the release date of the next project.

CONCEPTSHARE

Company: ConceptShare
www.conceptshare.com

CONCEPTSHARE IS A creative operations management platform designed to structure and streamline review and approval workflows.

As with many tools, ConceptShare uses analytics and reporting to highlight a project's status and identify whether there are any bottlenecks. The tool is also flexible, built to enable developers to use it the way they want, allowing users to adjust roles, permissions, workflows and other options to ensure it fits in with the team.

PROJECT LIBRE

Company: Marc O'Brien and Laurent Chrettieneau
www.projectlibre.org

PROJECT LIBRE IS an open source project management application downloaded over 1m times that runs on the Java platform, and can be used on Linux, Mac and Windows.

Project Libre is actually a fork of OpenProj, which had stopped being updated in recent years, and is developed by the same founders. The tool automatically organises and tracks tasks, and can be used in conjunction with software such as LibreOffice and OpenOffice.

TRELLO

Company: Trello Inc
www.trello.com

THOUGH IT IS designed as a To Do list for individual users, Trello can also be used by games development teams to manage a title's development.

The software uses cards to show progress, and users can be dragged and dropped into specific lists depending on what they are working on. The unique visual approach allows users to see an entire project at a glance, and can be updated in real-time. Devs can also post comments, upload files, add checklists, labels, due dates and more.

KEY RELEASE

A helping Hansoft

The popular project management software gets everyone involved for its eight iteration

WHETHER DEVELOPING A simple indie title or a triple-A blockbuster, managing your team and project is essential to efficient games development.

There are plenty of project management solutions out there, but one that has proven to be popular with developers is the Swedish made Hansoft. This year, the team has released Hansoft 8, which aims to ensure that every member of the team is involved in how their game moves forward.

"Hansoft isn't only used by the games development industry but also in electronics, aerospace, space, telecom and cloud services," says senior Hansoft coach Jon Leslie.

"Hansoft enables planning and collaboration. Members at all levels in organisations sized from less than ten employees to many thousands use Hansoft to do Scrum and tailored agile methods, Kanban, collaborative Gantt scheduling, defect tracking, document management, external party collaboration, long-term planning, real-time reporting, workload and portfolio analysis, among other things."

Hansoft 8's biggest improvements over its forebears is the combination of business intelligence with project management, bringing what the firm refers to as 'actionable agile metrics' to entire organisations. The result is that everyone at a studio can keep track of how a game's development is progressing.

Leslie adds that the Hansoft team has also improved the software's layout: "Decision-making on all levels, from the development team and the studio leadership, can now be supported by relevant data that can be visualised with iterative and collaborative dashboards."

As an example, Hansoft 8 allows users to create, manage and share charts via these dashboards, depicting the progress of various aspects of the game in question. These charts can be generated in moments thanks to the handy Chart Wizard, which acts as a simplified version of the dashboard editor and is accessible while in the middle of planning the project.

Other dashboard features include the ability to add pages, alter chart layouts and use reports as chart filters to find the data you're looking for.

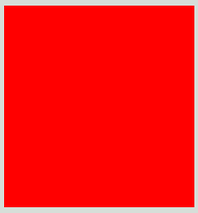
Charts can also be saved locally in picture, PDF or spreadsheet form. But it doesn't stop there: Hansoft will continue to update it every month based on user feedback.

Leslie adds: "We've integrated business intelligence into the tool and made it available for the whole organisation, and this is included in the licence.

"We believe the team empowerment nature of agile will drive a need for a democratisation of business intelligence throughout the organisation, as well as a need for BI tools to start catering for a more collaborative, iterative and agile approach to metrics."

Hansoft 8 is available now. It's free for up to nine users and can be downloaded from **www.hansoft.com.** ■

Hansoft 8
What is it: A tool for team collaboration and management in agile software development.
Company: Hansoft
www.hansoft.com

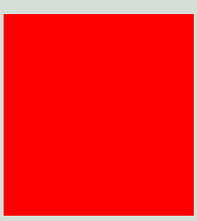


Hansoft's Jon Leslie says his team has gone to great lengths to ensure Hansoft 8 connects every member of a game studio

HEARD ABOUT

Shaping BioShock's score

John Broomhall talks to composer Garry Schyman about BioShock Infinite ahead of this year's Game Music Connect



Garry Schyman says the significance of Elizabeth (main) changed his vision for the soundtrack behind BioShock Infinite

EARLIER THIS YEAR, amidst critical acclaim that the dialogue, sound and music of *BioShock Infinite* was already receiving, came the impressive double whammy of both a nomination for Audio Accomplishment and a coveted mask for Original Music at the video games BAFTAs.

Talking to Garry Schyman, it quickly becomes apparent this was a passion project, although the score's immensely positive reception was still unexpected.

"Initially, I didn't think it would get as strong a reception as the original *BioShock* score I wrote, but it's gotten as much, if not more attention, which I'm overjoyed about," he says. "It's interesting in some ways, too – although there's obviously some complex music in the game, there's also a lot of very simple, very tonal content."

That the overall aural experience of *BioShock Infinite* is something of a tour-de-force is in no small measure due to a very distinct musical sound and 'voice'. So how did that come about? According to Schyman, the crystallisation of the game's musical signature can be pinpointed clearly.

"Originally, Elizabeth was not nearly as significant," he explains. "At E3, when they were showing some early in-game stuff, there was so much reaction to this character that it began affecting how things were structured – a moving target from the composer's standpoint – because things did change significantly.

"This was a seminal moment in how the score evolved. I remember specifically realising Elizabeth was very significant, and I said to music director Jim Bonney I had an idea for a theme for her and I thought it was important. I wanted to record it with live musicians before I presented it."

EXPERIMENTAL MUSIC

Schyman knew that *BioShock* creator Ken Levine responded well to live players and the emotion they could bring to the table, so he didn't want to use samples – especially as his ideas involved solo instruments. He was also aware there wasn't any budget for his experiment, so he paid for it himself.

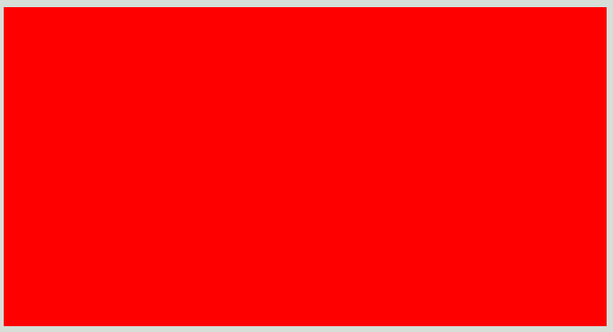
"It actually wasn't terribly expensive as it was simply a viola and cello with overdubs to create a quartet kind of sound," Schyman says. "When Ken heard it, he was very moved and it affected his view of how the music would work and how crucial it would be. The simplicity of that raw emotional music led us to realise that small string ensembles would be the direction for the score. They did reimburse me, by the way."

For Schyman, one of the most important factors in *BioShock*'s music success lies in creative collaboration.

"In general, the most creative music I've ever been asked to write has been on games and I think what people like about this score is that it's different from typical game music," he says.

"Plus, it's down to the fantastic creative partnerships I have with Ken Levine, Jim Bonney and Patrick Balthrop. They made a fascinating and super-creative world and then asked me to write some very unusual music. It's a very creative process, not without pain and not without difficulties, as in every project, but because of that struggle and experimentation, it made us generate an interesting score – and I think that's what people have reacted to." ■

Garry Schyman will take part in Game Music Connect on September 24th, where he will be featured in 'The Bafta Interview' and contribute to other panel sessions.
www.gamemusicconnect.com



John Broomhall is a game audio specialist creating and directing music, sound and dialogue. Find him at: **www.johnbroomhall.co.uk**

UNREAL DIARIES

Opening up Unreal Engine 4

Epic Games discusses goals for the UE4 marketplace and launches a call for submissions

UPCOMING EPIC ATTENDED EVENTS

EGX London
September 25th to 28th
Earls Court, London

IndieCade
October 9th to 12th
Culver City, CA

Game Connect Asia Pacific
October 28th to 29th
Melbourne, Victoria

PAX Australia
October 29th to November 2nd
Melbourne, Victoria

*Email **licensing@epicgames.com** for appointments and sign up for Epic's newsletter at unrealengine.com.*

BUILT INTO UNREAL Engine 4, the Marketplace provides access to a wide range of items that make it easier to create great experiences with Epic's game-making tools and technology.

Launched as part of the UE4 subscription offering earlier this year, the Marketplace is where people go to download highly curated content such as free sample games and scenes built by Epic's team, Unreal Engine partners and the community.

Everything in these gratis projects, from art and sounds to Blueprint logic and C++ code, can be re-purposed and used in any UE4 game or application.

Whether developers are looking to make a realistic racing sim, 2D platformer or high-fidelity architectural visualisation, the building blocks for a huge range of projects are available for download on the Marketplace immediately.

Because components in these free releases are fair game for use, developers can tap into them to quickly ramp up production and achieve their creative vision.

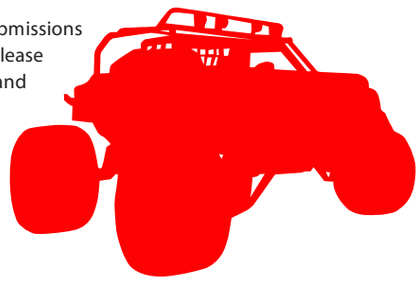
Also in the Marketplace are demos and complete games that are optimised for specific platforms, including PC, console, mobile, HTML5 and virtual reality. Epic's mission is not only to help teams and individuals get started making amazing games, but to ship them wherever they like as well.

While free high-quality downloads will always make their way into the Marketplace, specialised premium content is now available for purchase to help developers get a leg up even further.

Finally, Epic is taking submissions from those who wish to release UE4 assets, code, plugins and training materials on the Marketplace. ■

*To check out submission guidelines, visit **unrealengine.com/marketplace***

A wide range of demos and samples are available in the Unreal Engine Marketplace, no matter what type of game you're building



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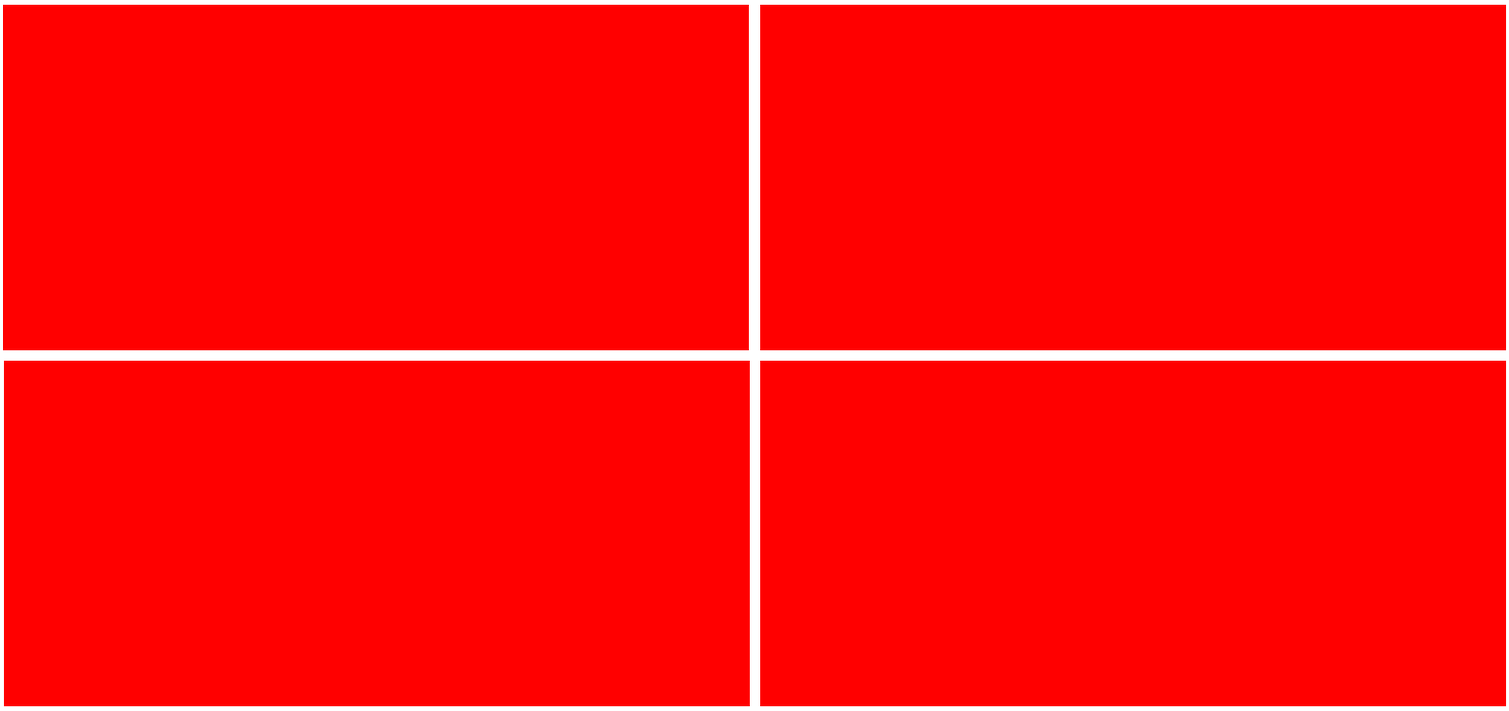
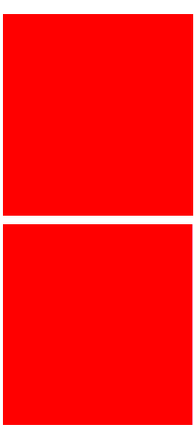


UNITY FOCUS

Club secrets

The HB Studios team discusses how Unity helped them create the authentic and social golf club of their dreams



HB Studios' Anthony Kyne (top) and Rami Alia (above) chose Unity as it saved time writing their own terrain editor

Why choose Unity for *The Golf Club*?

Anthony Kyne, producer: It was a toss-up at the time between Unity or our own engine. We'd just finished working on a couple of MLB.com games – *Home Run Derby* and *Franchise MVP*, both in Unity – and had a great experience with it. It gave us was a quick route to getting the game playable early on and iterating on that, rather than blindly coding and hoping it's going to be fun at the end.

The other thing is, when taking on a big project like *The Golf Club*, you want your most talented programmers actually working on the game rather than engine development, so Unity was a bit of a no brainer really. Our top guys could get straight into working on the course generation AI rather than having to write a terrain editor first.

Rami Alia, senior technical lead: When you compare the speed of start-up in Unity and the fact you can get prototypes up and running within hours instead of weeks, the robustness of the engine, and the ability to run on almost all platforms to other engines, it really does win hands down.

What makes *The Golf Club* stand out from other golfing titles?

Kyne: Golf is one of the most popular sports in the world. What people love about it is the challenge of beating themselves and their friends, and getting out of the house to walk the environments the courses are set in.

We felt it wasn't a sport that would be held back by not having all the big licences and famous courses. People want to be able to play their local course as much as they want to play Augusta or St. Andrews. Creating the visual and audio experiences of being out of those courses was important. We wanted the ambiance to be as relaxing as getting out on the course in real life.

We also didn't want loading times between holes. We wanted to be able to jump out of a round easily and jump into a round with your friends, creating that whole vibe an actual golf club has. We even created the Ghost Ball system that lets you compete against friends' previous rounds or your own.

The stand out feature is the Course Designer. The player can decide how blank they want their canvas before they start creating.

What features of Unity were most helpful?

Alia: Hands down, Unity's editor. The robustness of the tool, and ease of development within it are the reason why so many developers come to Unity.

For *The Golf Club*, the Terrain Editor was a major help. We had a solid base to start the course generator tool from, which became the Course Designer. If we hadn't had that base, we'd have spent a good piece of time just on something like that alone. Platform porting is also a lot easier.

What advice would you give new Unity devs?

Kyne: Using Unity is something that's a little bit different from just writing something in C++ from scratch. In some aspects, it's a different way of thinking. Unity has solved a lot of the problems for you, so if you feel that it's making you do something the long way round, you're most probably doing it wrong.

Alia: It gives you the ability to have prototypes up and running quickly, which gives the team confidence in the game. But the time made up at the beginning of the project doesn't mean that the 'creative' people on the team can start expanding the scope of the project. What you gain at the beginning of development you lose a little at the end as some of the simple stuff like front-end and optimisation is a little more fiddly than normal. ■

The Golf Club
Developer: HB Studios
Platform: PS4, Xbox One, PC
www.thegolfclubgame.com

MADE WITH MARMALADE

Treasures of the Amazon

Amazon's App Store is growing in popularity, and Marmalade is helping to bring in more developers

MARMALADE TECHNOLOGIES HAS teamed up with Amazon to encourage more developers to release their games on the retailer's app store.

The duo are giving studios a $50 Amazon voucher (or the local equivalent) for every app released via the Amazon App Store through Marmalade. Devs will also be entered into a grand prize draw with $75,000 worth of prizes, ranging from Marmalade Plus licences to Kindle Fire and Fire TV devices.

While the promotion will raise awareness of the opportunities the store offers, Marmalade is keen to emphasize the support its SDK already provides.

"Most Made with Marmalade apps for Android can be submitted to the Amazon App Store without any modification," says the firm's head of SDK Tony Waters.

"Developers may need to modify their apps if using Google Play services such as In App Purchasing or Game Services, and Marmalade simplifies this process by providing many of the Amazon equivalent services directly within the Marmalade SDK, making switching over in many cases trivial.

"In fact, if a developer uses Marmalade's billing middleware then the switch over for In App Purchasing is largely automatic."

The Marmalade SDK, even the free version, supports the Amazon App Store and its APIs, meaning devs already have the tools needed to release games on this growing marketplace.

"And unlike many of the other app stores, Amazon doesn't charge devs to join their developer program which means they can get started with Marmalade and deploy to the Amazon App Store for no cost," observes Waters.

> ***"Devs can get started with Marmalade and deploy to the Amazon App Store for free."***
> Tony Waters, Marmalade

EXPLORING THE AMAZON

But with Google Play seemingly dominating the Android market, why should studios even both releasing games on an app store run by a retailer?

"The simple answer is because it's really easy," Waters says. "If a developer already has an Android app, it's a very straightforward process to repackage the app into an APK that can be submitted to the Amazon App Store.

"The store is a fast growing marketplace. It's pre-installed on a substantial number of Android devices – including, of course, the Kindle family – and its size has nearly tripled in the past year."

Having such effortless tools at their disposal has helped a number of up-and-coming developers to get their games noticed, as Lady Shotgun Games' design director Anna Marsh points out.

"Amazon was an important part of our Android strategy – we didn't want to rely on Google Play alone, and Amazon has been active in supporting indie developers with feature spots, which is of course a huge help with discoverability," she says.

"Our feature spot on Amazon boosted our downloads and helped a great deal with the overall visibility of the game."

Double Stallion co-founder Daniel Menard adds: "*Big Action Mega Fight* (*pictured*) recently changed from freemium to premium, and we used the Amazon App Store to soft-launch the latter version. Amazon customers are used to paying for content, and Amazon makes that extremely easy, so we felt it was a good fit. When we saw the success on Amazon, we brought the premium version to our other platforms."

Marmalade's Amazon developer offer ends on September 30th. You can find out more at ***www.madewithmarmalade.com/offers/amazon*** ■

Why Marmalade matters:
The Marmalade SDK allows devs to release apps quickly and easily for the Amazon App Store – and could earn them gift certificates and goodies from a $75,000 prize pot.
www.madewithmarmlade.com

Top to bottom: Lady Shotgun's Anna Marsh, Double Stallion's Daniel Menard and Marmalade's Tony Walters

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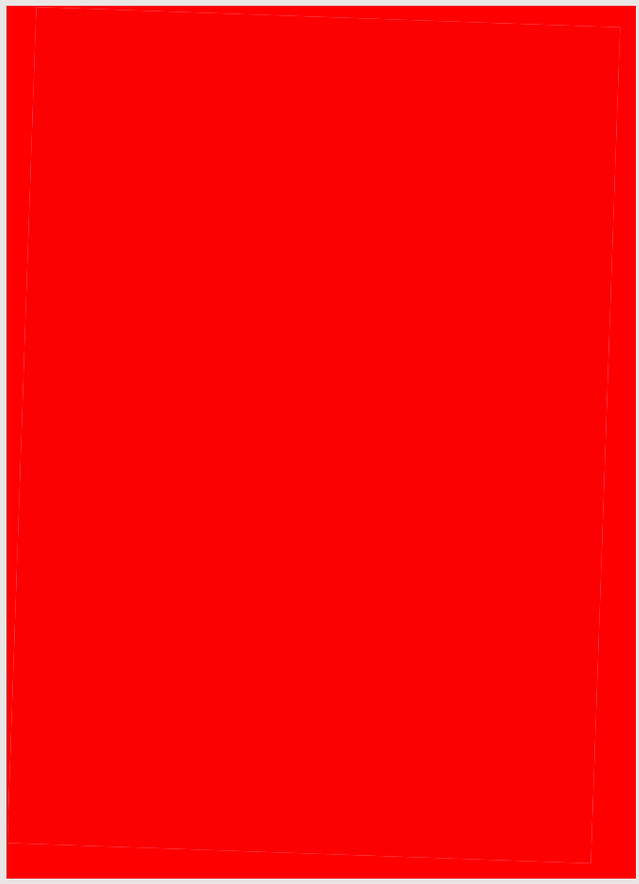

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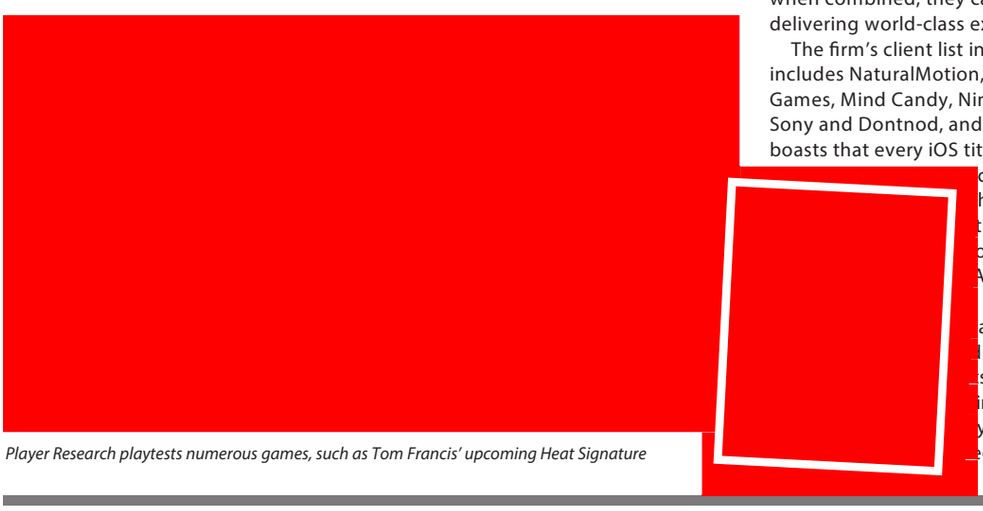
PLAYER RESEARCH IS a firm that specialises in user research and games playtesting across titles on all platforms, from mobile and tablet, to console, PC, handheld and browser.

The company, which received this year's Develop Award for Services, works with studios to help them deliver the experience they intend players to have, whether a challenging core game or casual title.

> ***Fixing issues early not only helps to deliver the best possible experience, but it also helps to reduce risk.***
>
> Graham McAllister



Player Research playtests numerous games, such as Tom Francis' upcoming Heat Signature

"We achieve this via a combination of approaches including concept testing, competitive analysis, interaction design, UI evaluation, expert reviews, playtests, and six other services," says Player Research founder Graham McAllister (*pictured below*).

"This allows us to assist developers at all stages of the development lifecycle (concept to post-launch). Each service on its own will help, but when combined, they can assist with delivering world-class experiences. "

The firm's client list includes includes NaturalMotion, Madfinger Games, Mind Candy, Ninja Theory, Sony and Dontnod, and the company boasts that every iOS title it has contributed to has made it to the front page of the Apple App Store.

McAllister says the firm differentiates itself from similar offerings by giving feedback to devs at all stages of development, enabling them to catch issues early. He adds this is hugely important for its clients to develop a polished experience for users in the final product.

"From the very beginning of development games are based on many assumptions which often go untested until late in development, if at all," he explains.

"Our aim is to help developers test these assumptions as soon as possible with a rigorous, scientific approach, giving developers confidence that their game is on track. Fixing issues early not only helps to deliver the best possible player experience, but it also helps to reduce risk, development time, and budgets."

Though still a relatively new discipline in the industry, McAllister says demand for its services is always growing, with the firm working on over 50 titles per year, and says more could be on the way.

"As we see greater variety in platforms, games, and business models, we're always adding new services to make sure our clients' games reach their full potential."

Digital Design Studio www.gsa.ac.uk/dds

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TOOLS SPOTLIGHT

This month: **Shotgun**

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Shotgun helps studios manage development in one place without needing separate production pipelines

SHOTGUN IS A cloud-based collaboration tool that offers a unified set of tools for production tracking, review and asset management.

The tool is designed to help streamline games development and make projects more easily manageable by keeping production organised and easily navigable.

"Development, especially on larger games, is all distributed, whether it's in a studio with multiple locations, or a collaboration with external vendors," says Shotgun CEO Don Parker (*pictured*).

"Studios really want to manage those efforts in one place, without needing separate systems and production pipelines for each location. Shotgun helps unify that process so everyone is communicating together in the same ecosystem."

The firm behind the tool was bought by tech giant Autodesk In June. Despite the acquisition, the tool will still operate under the same name and with the same third-party partners, with no changes to pricing, maintenance or licensing.

"Autodesk really supported our mission, and we joined with them to accelerate what turned out to be a mutual vision of an industry-wide, standardised production management system," he says.

"As part of Autodesk we now have three times the engineering firepower, so we'll be able to accelerate our product roadmaps, develop tools more aggressively, and get them into clients' hands faster."

> ***"Shotgun helps unify development so everyone is communicating."***
>
> Don Parker, Shotgun

One of the key features of Shotgun is the Shotgun Pipeline Toolkit – a collection of apps and engines maintained by the firm – all of which are open sourced and are made available on GitHub. On top of this, the Pipeline Toolkit also acts as a framework and development platform that makes it easy to quickly build custom pipeline tools.

One of the latest additions to Shotgun includes the integration with Perforce in an effort to create a more cohesive art and asset pipeline, while the recent Pipeline Toolkit also gives technical artists a framework to streamline many repetitive operations artists often have to do within their DCC apps.

In future, Parker says it will have teams working on production management, review and approval, asset management and the platform itself.

"We're firing on all cylinders to bring out new tools and features in those four areas," he states.

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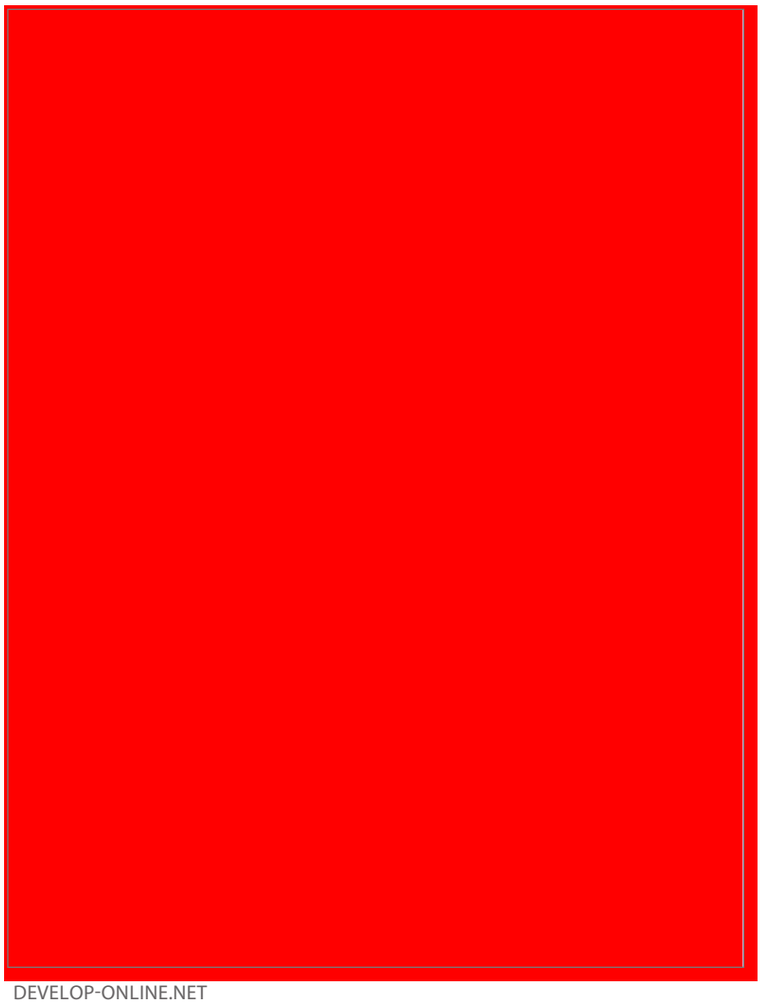

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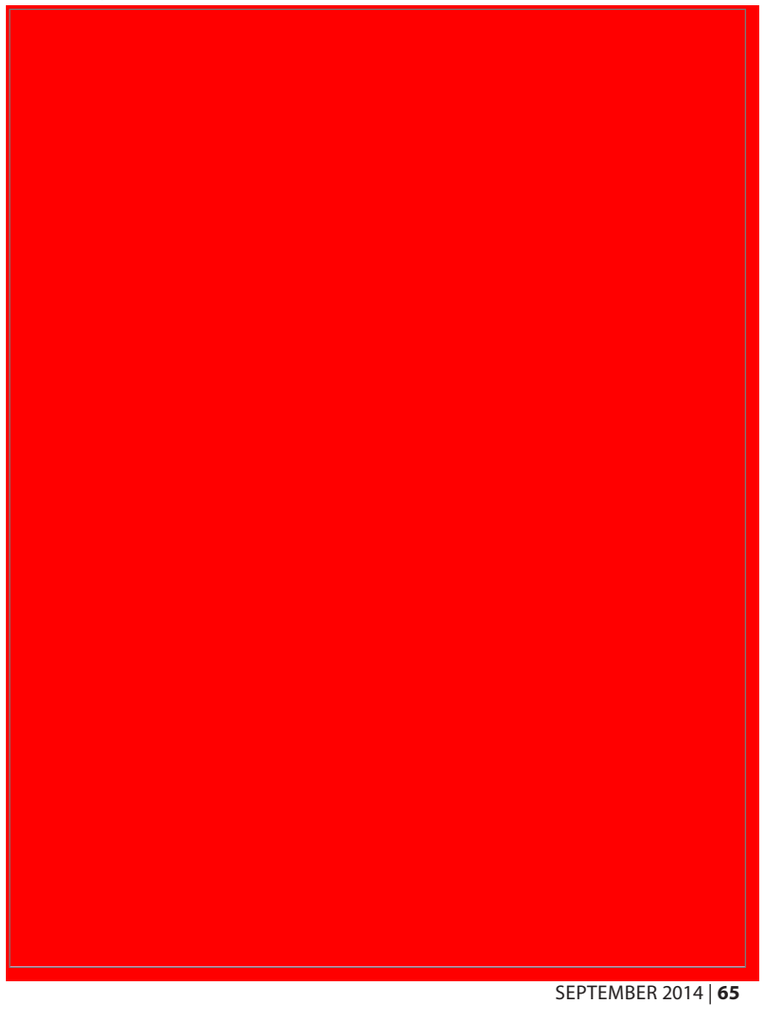

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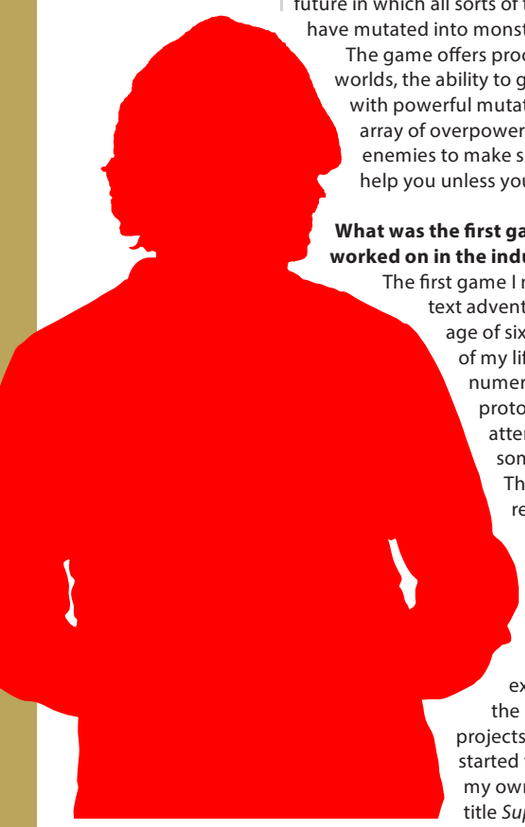

Rami Ismail says he spent years making games before hitting the big time with his first independent commercial release Super Crate Box

Who are you and what do you do?
My name is Rami Ismail, and I'm one half of Dutch studio Vlambeer, which is responsible for games like *Super Crate Box*, *Luftrausers*, *Ridiculous Fishing* and *Nuclear Throne*.

My tasks include development, production, marketing and business. I am also the creator of presskit(), a tool for developers to use when presenting their game to press, and I'm currently working on distribute(), another developer-focused tool.

What are you working on right now?
Nuclear Throne, a really fast-paced top-down action game set in a strange post-apocalyptic future in which all sorts of things on Earth have mutated into monsters (*above far right*). The game offers procedurally generated worlds, the ability to grow your character with powerful mutations, a ridiculous array of overpowered weapons and enemies to make sure none of that will help you unless you're good.

What was the first game that you ever worked on in the industry?
The first game I made was a terrible text adventure I made at the age of six. The next 15 years of my life or so were mostly numerous terrible prototypes and failed attempts at making something 'big'. The first commercial release I ever contributed to was probably Starwraith 3D Games' title *Evochron*. Over time, my experience went up, the scope of my projects went down and I started finishing games of my own. Vlambeer's debut title *Super Crate Box*.

What was the first video game you ever played, and did you enjoy it?
It was a terrible MSDOS game called *Janitor Joe*. There was no redeeming quality to it, and to this day I do not know whether my terrible memories of the game reveal that *Janitor Joe* was simply completely bugged, cruelly impossible or whether my obsessive attempts at the game just show how terrible a gamer I was at age six.

> ***"Seeing people's dedication in emergent territories despite endless obstacles is truly inspiring."***

What was the most recent game you played, and did you enjoy it?
I'm currently playing *Soul Sacrifice* (*above*). I'm not sure what I think of it yet, not being pretty far into the game, but I appreciate that you can immediately skip ahead to the final battle with the main antagonist, regardless of your strength or equipment. I'm also running through *Professor Layton vs Phoenix Wright* on my 3DS, which I'm enjoying a lot for both its presentation and its gameplay.

What is your favourite game ever, and for what reason?
I think that'd be the original *Metal Gear Solid*. It's the first game I bought with my own money, and in many ways it showed to me that games could be more than just 'games'. *Metal Gear Solid* talked of serious subjects, things like relationships and politics, betrayal and bipedal nuclear-equipped battle robots.

How many hours a week do you spend playing video games?
On average, I try and play an hour or so a day – most of that time is spent browsing through the @CuratedGames feed I created on Twitter.

What do you enjoy about the video games industry today?
The borders of 'video game' are broadening, the variety of experiences is increasing, and there are more people in our industry now than any other time.

I travel to help out in emergent territories, where the games industry is only just taking off, and seeing their dedication despite the endless obstacles, but also their fresh ideas and perspectives, is truly inspiring.

What disappoints you about the video games industry today?
That the struggle for diversity is still not a widely accepted valid one. I'm not just talking about gender diversity, although I find it an extremely important subject – I'm talking about all sorts of diversity here. I'm talking about diversity in race and sexuality, disabilities, age, nationality, ideology and language. There are simply not enough games by people that aren't already inundated with gamer or geek culture, people without Western or Japanese backgrounds, and people that aren't white or male or straight.

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